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In This Issue

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SURGERY AND OBSTETRICS

CLINICAL DATA

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AVMA ☆ Report

Veterinary Medical Activities

✤ President C. P. Zepp, Sr., attended the meeting of Florida State V. M. A. at Jacksonville, Oct. 23-25, 1949; and of the Southern V. M. A. at Birmingham, Ala., Nov. 7-9, 1949. On Nov. 10, Dr. Zepp addressed the AVMA student chapter at Alabama Polytechnic Institute, Auburn.

★ ★ ★

✤ President-Elect W. M. Coffee represented the AVMA at the meeting of the Maine V. M. A. and the New England V. M. A. at Poland Spring, Maine, on Oct. 18-19, 1949; and also was on the program of the Missouri Short Course for graduate veterinarians at Columbia on Oct. 31-Nov. 1, 1949.

★ ★ ★

✤ The Board of Governors has granted a request from the National Brucellosis Committee for help in preparing a brochure to be used in raising funds for a nationwide educational program. Dr. C. D. Van Houweling will work with the chairman and the secretary of the Committee in preparing this material.

★ ★ ★

✤ The AVMA Code of Ethics exhibit was displayed at the October meeting of the Twin City V. M. A. Dr. B. S. Pomeroy, secretary, writes that "The exhibit is certainly a fine one and was invaluable in our particular problem." Other associations may have it for their meetings.

★ ★ ★

✤ A letter has been forwarded to Mr. Eric Johnston, President of the Motion Picture Producers Association, proffering the services of the AVMA and its members for consultation in motion pictures in which veterinarians or veterinary techniques are depicted. This letter was written upon authorization by the Board of Governors in order to insure recognition of the high professional standards maintained by modern veterinarians.

★ ★ ★

✤ The Brucellosis exhibit of the AVMA was shown at the American Public Health Association convention in New York, Oct. 24-28, 1949. Drs. L. E. Stanton and G. W. Snook of the New York State Department of Agriculture, and Drs. Sol Shapero, president, C. R. Schroeder, secretary, R. S. MacKellar, Sr., J. B. Engle, and F. W. Schutz of the Veterinary Medical Association of New York City assisted Dr. R. C. Klussendorf in answering questions raised by visitors to the exhibit.

★ ★ ★

✤ Student chapters at Pennsylvania, Cornell, Ontario, and Michigan State scheduled meetings to enable Assistant Executive Secretary R. C. Klussendorf to speak about some of the projects of the AVMA and the manner in which these affect the student chapters and members in general.

★ ★ ★

✤ Director of Professional Relations C. D. Van Houweling appeared before the veterinary medical section of the American Association of Land-Grant Colleges and Universities on October 24 to stimulate interest in preparing more scientific and educational exhibits for display at the AVMA and other professional conventions.

Dr. Van Houweling also spoke before the Interstate V. M. A. at Sioux City, Iowa, on October 27-28; the Mississippi Valley V. M. A. on November 2-3 at Peoria, Ill.; the midwest representatives of the Associated Serum Producers at Indianapolis, Ind., on November 15; and the students of the College of Veterinary Medicine, University of Illinois, at Urbana on November 17.

★ ★ ★

✤ A joint meeting of veterinarians and public health officers was held at Springfield, Ill., on November 16-17. Dr. R. C. Klussendorf participated in a panel discussion as a representative of the AVMA and in the interest of better veterinary and human medical relations.

★ ★ ★

✤ Dr. L. Meyer Jones, professor of pharmacology, Division of Veterinary Medicine, Iowa State College, Ames, has been nominated to represent the AVMA and the veterinary medical profession on the Committee of Revision of the Pharmacopoeia of the United States of America for the decade 1950-1960.

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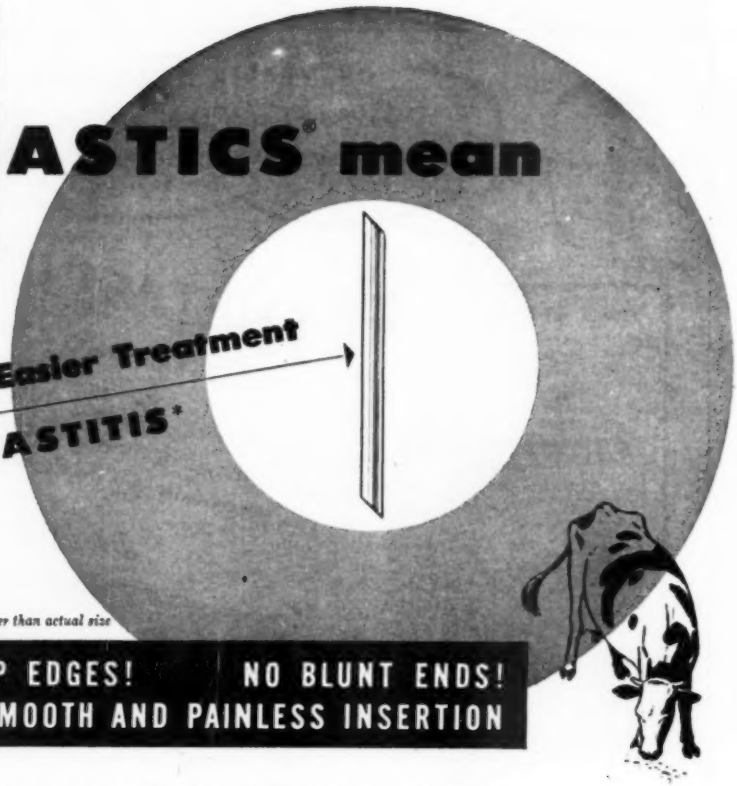

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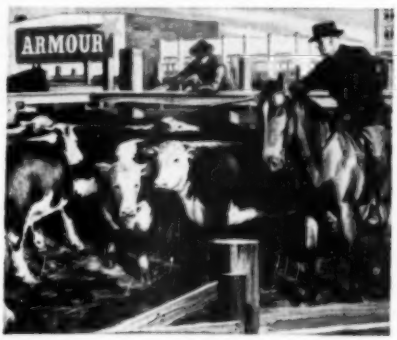

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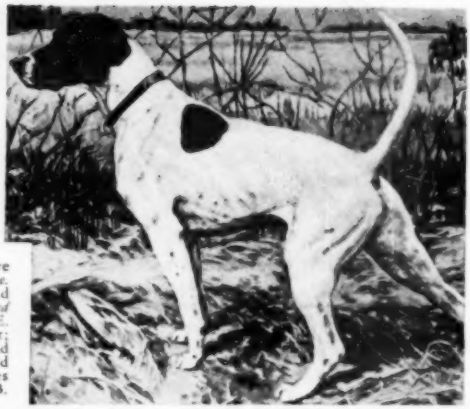
CARTILAGE and BONE



In a field dog, nose, brain and drive must synchronize with muscle and *bone*. Food can *help* control bone size and "strength"—help *build in* what is *bred in*. This Pointer is F. T. Ch. Tyson (H. E. McGonigal, Kokomo, Indiana, owner; Howard Kirk, handler), big-time field trial winner and producing top field trial winners. Mr. McGonigal likes results obtained with HUNT CLUB.

NO. 14 MEMO FROM W. E. ARMSTRONG TO VETERINARIANS

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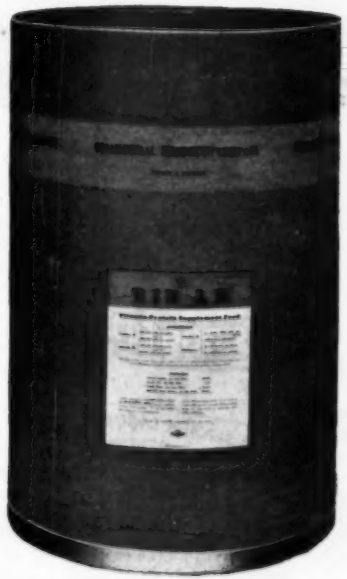

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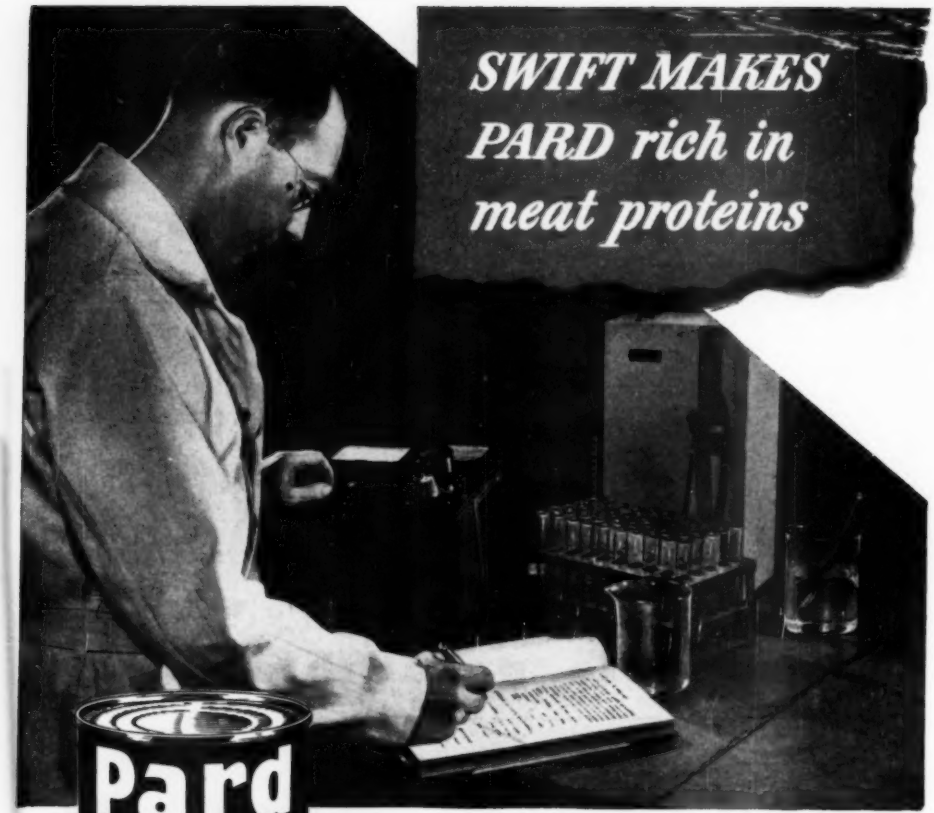

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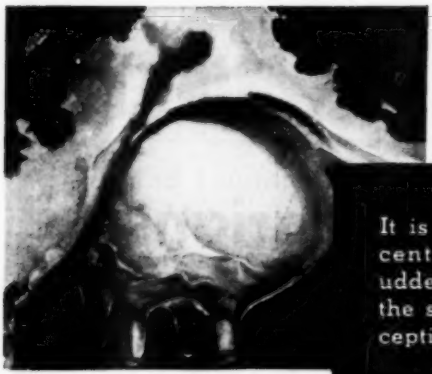

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1. Foley, E. J.; Stults, A. W.; Lee, S. W., and Byrne, J. V.: Am. J. Vet Research 10: 66 (Jan.) 1949.

Journal
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VOL. CXV DECEMBER, 1949 NO. 873

The Fourteenth International Veterinary Congress

A cast of 1,421 specialists—600 official delegates—from 53 food-conscious nations dramatized in London the critical situation overtaking the crowded world of the present and near future, and laid down the plans that the world's population must adopt to prevent increasing undernourishment, as numbers multiply and standards of living mount. That, in a word, was the theme of the plenary sessions of the Fourteenth International Veterinary Congress from the opening addresses to adjournment.

Sir Daniel Cabot was formally elected president, and his "grave and unobtrusive dignity" caused this Congress to be distinguished by its solemnity, says *The Veterinary Record*, which devotes most of its Aug. 20, 1949, issue to the event.

The Right Honorable Mr. Hector McNeil, Minister of State, opened the meeting on Monday, August 8, declaring that "Hunger is an international currency; knowledge should be an international passport." The veterinary profession alone, he declared, could break down the barriers that render large territories unproductive.

In his presidential address, Sir Daniel Cabot alluded to the revolutionary changes in our conception of therapy as a supplement or adjunct to prophylaxis in disease control. The most urgent problem of the day—that of supplying food to the rapidly-increasing human population—constitutes a very real threat to western civilization. He analyzed the veterinary endeavor as consisting of three phases: (1) to suppress or eradicate the major killing diseases; (2) to control the more chronic infectious diseases; and (3) to prevent those conditions which arise from deficiencies or metabolic disorders. These can be coördinated to the best advantage of the world-food situation by means of a powerful international veterinary organization. Only when permanent coöperation is assured in this way may we hope for "a world of prosperity, unity, and peace."

Lord Boyd Orr, D.S.O., M.C., F.R.S., keynote speaker of the opening session, predicted that the present 2 billion people on earth now will be 3 billion in forty years, and that the area of fertile land is decreasing through erosion and human demands. "Science knows the answer," he declared, "but the problem is one of economics and politics." He emphasized that the loss of food from rinderpest, bovine contagious pleuropneumonia, glanders, and protzoan diseases is tremendous and is intensifying under the influence of the mechanical age, to which the world has not become adjusted since "the horse was the quickest means of transport and communication."

In India, where there are over 200 million food-producing animals, the loss from diseases is over 50 per cent, Lord Orr pointed out in his address. So, the veterinarian steps in to ameliorate a situation of first importance in the human affairs of this day.

Dr. B. T. Simms, chief of the U. S. Bureau of Animal Industry, stated that without the veterinary profession there could be no enduring civilization, because there could be no economic production of food. Without animals, there could be neither abundance of food nor conservation of the soil. By coming to this Congress, veterinarians brought with them the responsibility of preserving this civilization. Prof. Jean Verge, of France, said the troubled world is split between fear and hope, and that it was good to meet in a country whose tradition deserves the gratitide of the profession.

Dr. W. R. Wooldridge, scientific director of the Animal Health Trust, England, quoted from the report of the Loveday Committee on Veterinary Education in Great Britain: "The veterinary surgeon is the physician of the farm and the guarantor of the nation's food supply." He cautioned, however, that "it would bode ill for the future of the profession if our educa-

tion became too narrowly vocational." He advised that the student have a good general education, including the basic sciences of chemistry and physics as preliminary to the study of the biological and natural sciences which lead to an understanding of the normal living body. Because of the rapid progress "there has developed a real danger of giving the medical and veterinary student complete and incurable indigestion in the early part of his course."

The modern veterinarian must have a reasonable knowledge of all domestic animals but especially those concerned with the production of food for human consumption, in order that he may correlate all of the phases of his work and conclude whether the clinical signs observed are the result of nutritional, endocrine, or parasitic disturbance. To do this, it is necessary that he understand animals—their breeding, rearing, and feeding. Otherwise, knowledge of the causes, pathology, treatment, and prevention of disease can not be used to best advantage.

The following members were elected as honorary presidents of the Congress: Prof. L. De Blieck (Holland), Prof. Ch. Guérin (France), Col. Max Henry (Australia), Prof. E. Leclainche (France), Dr. Josef Marek (Hungary), Dr. John R. Mohler (U. S. A.), Prof. H. Magnusson (Sweden), Dr. D. J. du Toit (South Africa).

At the closing session of the Congress, it was voted to hold the Fifteenth International Veterinary Congress in Sweden in 1953, as recommended by the Permanent Committee. In concluding the report from which these excerpts have been drawn *The Veterinary Record* says: "The path wherein duty lies has been clearly put before us. Let us not fail."

One paper was presented at each of the plenary or general sessions of the Congress, and a brief summary of each paper follows.

Prof. H. C. Bendixen, Copenhagen, opened his remarks with the statement that milk production depends on cattle and veterinary service. The first veterinary colleges were established in Europe about 1750 to combat rinderpest, and the emphasis has remained on disease and treatment—particularly the acute, highly fatal epizoötics. Four problems are currently outstanding in causing severe economic loss: tuberculosis, brucellosis, foot-and-mouth disease, and mastitis. For each of these, success in control and eradication depends upon widespread cooperation. In addition, there are infections of secondary importance, as well as nutritional and deficiency diseases.

Animal disease is important, not only because of the direct loss which it occasions but also because it prohibits improvement. This is particluarly true in the high-producing herds which are especially vulnerable to many diseases.

Despite the early and continued stress on acute disease and its treatment, there is an increasing shift to consideration of nutrition, breeding, animal husbandry, and general hygiene.

Dr. C. S. M. Hopkirk, New Zealand, listed the "bill of rights" of livestock as: (1) the right to be bred on useful lines; (2) the right to be well fed; (3) the right to be kept free from preventable disease; and (4) the right to produce economically for the service of mankind. The veterinarian alone is competent to speak on all four aspects, and to work with specialists in any of these groups. He does not work alone, however, since all agricultural scientists are working toward increased production of food for the world. Because the work of the veterinarian is of great world importance, his contribution must be wholehearted and must be based on wide knowledge of the problems in all four aspects.

In the field of nutrition, veterinarians have achieved prominence for the basic work in such deficiencies as phosphorus (South Africa) and of cobalt and copper (New Zealand and U. S. A.), to name but a few.

In animal disease control, the veterinarian must accept full responsibility in all types of domestic livestock—there must be no shifting of this responsibility to the medical health authorities.

Dr. J. R. Beach, United States, reported that prior to 1915 two significant findings had been established: (1) Avian tuberculosis can be eradicated from a farm by certain procedures of management and sanitation; and (2) pullorum disease is transmitted by the hen to the chick through the egg. Later work has developed vaccination procedures which prevent such highly destructive virus diseases as fowlpox, laryngotracheitis, infectious bronchitis, and avian pneumoencephalitis. Effective vaccines for the prevention of bacterial and parasitic diseases have not been found, however.

During the intervening years, veterinarians have developed and used disease-control procedures which have saved the lives of untold numbers of chicks, and have contributed heavily to the world's supplies of poultry and eggs. These contributions might well have been much greater if practicing veterinarians and livestock disease-control officials had accepted more of the responsibility for protecting the health of

poultry—as they have of other types of farm livestock.

Prof. Nils Lägerlof, Sweden, answered three questions which he himself propounded.

1) The breeding problems of greatest interest to veterinarians are: (a) ensuring good conditions of fertility in cattle and (b) maintaining the animals' ability to reproduce for many years. Hereditary and environmental factors are involved.

2) The solution of these problems depends upon collecting a large volume of material and then analyzing it carefully. They will be solved only when owners call in veterinarians for pregnancy examination and for treatment of fertility—and, incidentally, when veterinarians record the findings of examinations and plan and install programs for proper sexual health control.

3) Veterinarians can render the best possible service to animal farming by working with nature, not against it. Artificial insemination has created a great demand for effective veterinary-gynecologic service, and an outlet for prompt and widespread application of the known facts. These must be gained by continuous research and coöperation between investigators and practitioners.

It is no longer enough that a few veterinarians have specialized in this subject; now all veterinarians who work with cattle must necessarily have adequate knowledge and practical experience concerning the problems of reproduction. This requirement becomes more pressing each year.

Veterinary Public Health Resolutions Passed at the Congress

At the final plenary session of the Fourteenth International Veterinary Congress, Aug. 13, 1949, the following resolutions pertaining to veterinary public health were passed:

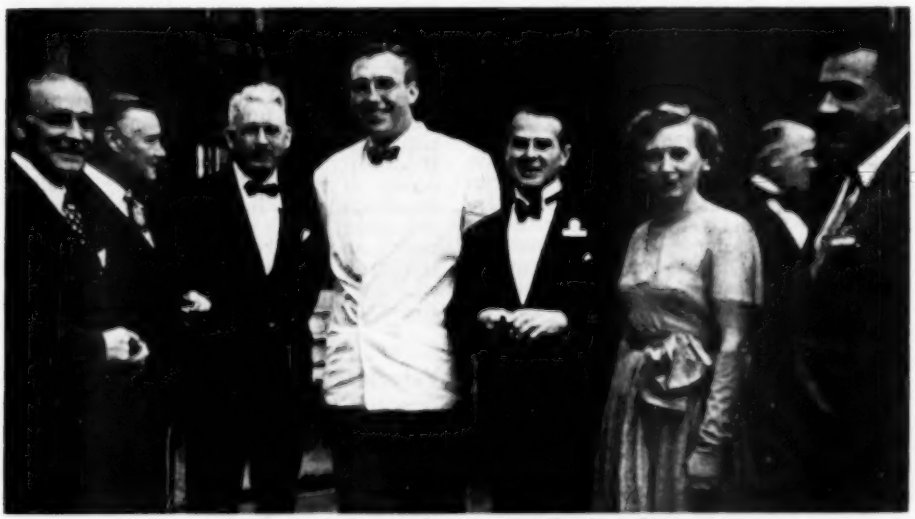
1) A resolution was forwarded to the World Health Organization suggesting the establishment of a veterinary public health section in that organization.

2) A resolution called for world-wide rabies eradication.

3) A resolution called for international coöperation on brucellosis control and eradication.

4) The eradication of bovine tuberculosis should be the goal of every country. The use of BCG vaccine in cattle was recommended for areas where the incidence of the disease was 40 per cent or more, such as in certain countries of eastern Europe and Asia. It was also recommended that the prophylaxis of animal tuberculosis be included in the agenda for the Fifteenth International Veterinary Congress.

5) A resolution called for the control of



In London at the Fourteenth International Veterinary Congress

Dr. C. P. Zepp, Sr. (left), president of the AVMA; Dr. James Farquharson, Fort Collins, Colo.; Dr. John Ray, Omaha, Neb.; Dr. James A. Steele, Atlanta, Ga.; Prof. N. Beveridge, dean, School of Veterinary Medicine, Cambridge University, England; Mrs. Beveridge; and Dr. W. T. S. Thorp, Washington, D. C.

mastitis and emphasized its importance in milk sanitation.

6) A resolution recommending the establishment of a world, animal influenza-typing station was transmitted to the World Health Organization.

Dr. Martin M. Kaplan (UP '44) has accepted a position with the World Health Organization as a public health veterinarian and consultant. Dr. Kaplan also has his graduate degree (UP) in public health.—*James Steele, D.V.M., Atlanta, Ga.*

England's Animal Health Trust

One of the tours arranged for the week following the Fourteenth International Veterinary Congress in London provided information concerning one of the most novel, interesting, and ambitious programs yet undertaken for the betterment of veterinary service in animal disease control. This program is being carried out by an organization termed the "Animal Health Trust" which was founded in 1942. The motivating force was stated to be the realization "(1) that immediately after World War II was over, livestock would be the sheet-anchor of a healthy and prosperous agriculture which all political parties were pledged to maintain; (2) that veterinary science has a tremendous contribution to make to the maintenance of a healthy livestock industry; and (3) that a healthy livestock industry is the cornerstone of a sound nutritional program for the people."

The specific objectives as given in a descriptive pamphlet were:

"To undertake research work on behalf of all sections of livestock; to assist young men and women desirous of entering the veterinary profession but handicapped by lack of means; to provide postgraduate scholarships for potential specialists; to establish a hospital and diagnosis service to operate behind veterinary practitioners throughout the country; and generally to assist existing veterinary institutions which are handicapped by inadequate financial resources."

Sponsorship and support of the Trust have been obtained from an imposing list of prominent and influential people from the ranks of livestock owners, "animal lovers," veterinarians, and scientists. The over-all direction of the program is in the capable hands of W. R. Wooldridge, Ph. D., M.S., M.R.C.V.S.

Operation of the activities of the Trust is said to require an annual income of not less than 200,000 pounds. The financial support has been derived solely from donations, bequests, and subscriptions from all possible sources including individuals, firms and corporations, livestock organizations, fairs, horse and greyhound race meetings, benefit dances, card parties, concerts, tennis and golf tournaments, horse shows, etc., and house-to-house solicitation. In addition, certain buildings suitable for conversion into laboratories and offices and considerable amounts of land have been purchased or placed at the disposal of the Trust.

The fund so obtained has been sufficient to enable the Trust to make significant progress with its program. Educational awards have been made to 92 undergraduate or postgraduate students. The latter and members of the scientific staff of the Trust were the authors of 32 articles published in 1947 and 1948. Equine, canine, and poultry research stations are in operation and are staffed with competent personnel. A research station for other farm livestock will be in operation in the near future. These stations are located near Cambridge to facilitate coöperation and counsel from the staffs of the animal pathology and other appropriate departments of the University. No definite move toward the establishment of veterinary hospitals has as yet been made. The plan, however, is to establish at least one in each county and these, together with "the trained staff and their special facilities, will be at the disposal of all veterinary surgeons in handling the diagnostic and other problems which arise in the course of their daily activities. The training and registration of veterinary nurses and technical assistants will also be undertaken."

The Trust, thus far, appears to have received generous and adequate support. If this continues in sufficient amount to enable the development and conduct of the entire projected program, the Animal Health Trust will prove of tremendous benefit to the livestock industry in all of its phases, including the equine and canine population. It is a really ambitious undertaking and its fruition will redound to the credit of the courageous and far-sighted men by whom it was instituted.—*J. R. Beach, D.V.M., Berkeley, Calif.*

Veterinary Education in Britain

The Fourteenth International Veterinary Congress will go down in history as a milestone in the broader development of the responsibilities of the veterinary profession to livestock well-being and human health throughout the world.

Larger groups from the countries of Africa, South America, and the islands of the Atlantic and Pacific areas, making it

more respresentative of the entire world, compensated for the absence from the Congress of the usual large delegation from Germany.

The entertainment during the Congress and on the post-congress tours was much more elaborate than we had expected. It demonstrated again Britian's abilities as host and London's facilities for carrying out a large-scale program of hospitality to overseas visitors, experience in which covers centuries of time.

We were impressed by the volume and quality of the veterinary research work going on that was demonstrated to us at Cambridge Univeristy, the Ministry of Agriculture and Fisheries Weybridge Laboratories, the Animal Health Trust Foundation at New Market, and Boots and Company, Ltd., at Nottingham.

There seems to be a zone in animal wellbeing, between the practitioner on the one hand and educational institutions and official veterinarians on the other, that is not covered. It was a very agreeable surprise to see a real effort being made in Britain, through the Animal Health Trust, to cover this phase of veterinary medicine. It is being carried forward by capable veterinarians supported by influential people. The program is an ambitious one, well worth watching by other parts of the world.

Very impressive was the recent renaissance in veterinary education in the British Isles. The Royal College of Veterinary Surgeons continues to function in the overall picture at its headquarters in Red Lion Square, London. On the other hand, it is the intention to have each of the veterinary colleges affiliated with an educational institution rather than as a separate organization. Isolation has retarded progress, plus a tendency to be too readily satisfied with the *status quo*. Cambridge University is going ahead with plans for a school of veterinary medicine. This decision by that great institution of learning with such a rich historic background promises to be a development of great import in veterinary education.—*George H. Hart, V.M.D., University of California, Davis.*

Dr. Laitinen Reports on Finland

When I was on the AVMA European tour in connection with the Fourteenth International Veterinary Congress, it was my pleasure to meet with several veterinarians from Finland, and they offered the following statistics:

Population (people)	4,000,000
Sheep	1,000,000
Cattle	1,500,000
Horses	400,000
Hogs	400,000
Poultry	1,000,000

There are 250 veterinarians in Finland, and 15 replacements are needed annually. Veterinary students spend their first three years in Helsinki and the remaining three years at Oslo, Norway (5), or Stockholm, Sweden (15). Of the 100 to 120 students who apply annually for admission to veterinary schools, 20 are accepted. Seventy-four veterinarians are employed by the state and laboratories; 90 are employed in the city and county; 10 to 15 are in private practice; and the balance are in the army.

The country is tuberculosis-free. Brucellosis is present in ¼ of 1 per cent of the livestock. There is no calfhood vaccination. Mastitis is constantly checked and is at a minimum. Infectious diseases of livestock have been practically eliminated. Diseases caused by deficiencies are prevalent.

I think Finland, which has been so harassed by wars and which is making reparations payments to the United States and Russia, has done exceedingly well in controlling her livestock diseases.—*Edwin Laitinen, D.V.M., West Hartford, Conn.*

Moredun Institute of Research

The Moredun Institute of Research, Edinburgh, is under the directorship of Prof. J. Russell Greig, whom a number of the older veterinarians have met on previous occasions. He is not only a royal entertainer but also a fine gentleman and endowed with great ability as a research man.

There was no animal disease research laboratory in Scotland until after World War I, desipte the importance of the sheep industry. Nothing had been done to ascertain the causes of the various diseases of sheep, and veterinarians generally took no interest in treating them.

About 1920, the present quarters for the research laboratory were built. They occupy about 20 acres, with adequate buildings for all necessary laboratories and equipment to carry on research of all kinds. Necessary fields were fenced to take care of experimental animals.

The interesting part of this set-up is that the Stockmen's Association of Scotland bore about one-half of the expense and the government the other half, and for a number of years, the expense of carrying on the research laboratory has been on a 50-50 basis. More recently, the burden has been borne more and more by the government.

A number of sheep diseases are common in Scotland that are not present in the United States, and we have some that they do not have. But many diseases of sheep are common to both countries. Research has been done on "border pining" (cobalt deficiency), louping ill, braxy, enzoötic abortion, scrappie, and other diseases common to all countries.

Considerable work has also been done on the diseases of cattle and other farm animals.

Dr. Greig is best known to the veterinarians of the world for his early theories on milk fever of cattle and his discovery of calcium gluconate as a treatment for it, as well as his work on acetonemia, grass tetany, and other diseases.

At the present time, he and his staff are studying a disease of horses commonly known as grass sickness, but now known to be caused by a virus. They are using as their laboratory animal a little herd of Welsh ponies, which can be secured at far less cost than horses, and seem to be equally susceptible to the virus of the so-called grass sickness of horses.

This virus seems to be similiar to the one which causes poliomyelitis in man. The disease has been found in certain sections but continues to establish itself in new areas. It produces an intestinal paresis and is most commonly seen during June when the grass is most luxurious, which probably accounts for its name "grass sickness."

The Moredun Institute of Research, which is not large, is doing one of the finest pieces of research of any institution of its kind in Europe, under the leadership of its director.

Dr. Greig gave us an interesting account of his experience in handling cobalt deficiency, which is the cause of border pining in sheep. In the early days, the Scotch shepherds noticed that when they grazed their sheep on the sandy, light colored soils of certain parts of Scotland the sheep failed or pined away. It was also found, possibly by accident, that if these sheep were driven to the blacklands and left there for three or four days, they could be returned to the "pining land" and would do well for seven or eight months. After which time they would start to pine again and would have to be returned to the blacklands.

Sheep affected with pining were first examined at the Moredun Institute and were found to be anemic. Without further investigation, the use of crude iron sulfate was advised, and the sheep showed marked improvement and quickly recovered. Within a short time, the use of this drug for pining spread over great areas in Scotland. Later, another investigator fed iron sulfate, freed from all impurities, to pining sheep and found that it did no good whatever. This led to the discovery that the reason the crude iron sulfate had helped the pining sheep was because it carried traces of cobalt. In the mean time, Scotland has analyzed the soils and mapped the land deficient in cobalt and is seeding with airplanes the deficient areas with cobalt-carbonate dust at the rate of 2 lb. per acre. One seeding will probably be good for nine to twelve years. After the addition of cobalt to the land, sheep which apparently had been doing well on certain farms, have now grown and developed much more rapidly, indicating that many areas were very close to a complete lack of cobalt and that bringing the soil content up has increased the productivity of the sheep.

This institution has carried on research on mastitis of cows and diseases of calves, notably scours and pneumonia, which cause so much trouble wherever the winters are long and animals do not have access to plenty of sunlight and green feed.

It has long been common knowledge that colostrum has great protective powers against many of the diseases of the newborn, notably those that affect the digestive tract. At Moredun, when calves were given a little of the colostrum in their milk each day, it was almost impossible to infect them with the ordinary bowel diseases, even when the most virulent types of these organisms were given.—*T. O. Brandenburg, D.V.M., Bismarck, N. Dak.*

Science Benefited from International Congress

The Fourteenth International Veterinary Congress was successful and, as a whole, it was interesting and instructive. It was exceptionally well organized, as was evidenced by the smoothness and efficiency of operation from the time of registration until the termination. The officers, the members of the Organizing Committee, and others representing the host nation, were remarkably solicitous regarding the welfare of all visiting delegates and members. They were most gracious hosts.

Probably the most important benefit derived from the Congress was the opportunity afforded veterinarians of the nations of the world to meet again as a group in scientific endeavor, working toward the solutions of problems which are the responsibility of the veterinary profession.—*Brig. General J. A. McCallam, V.C., office of The Surgeon General, Washington, D. C.*

U. S. Army Veterinary Aid to European Governments During and Following World War II

LIEUTENANT COLONEL FRANK A. TODD, V.C., D.V.M., M.P.H.

THE ADVANCEMENT and success of science in controlling and preventing diseases in both man and animals have made it possible for men to work together, to play together, to live together, and to enjoy more fully their birthright of health and long life. These improvements have been utilized by our modern Army in preventing the introduction, and controlling the spread, of human and animal diseases under those conditions where the operations of battle and the aftermaths of war have, in the past, caused enormous losses of men and animals from disease and famine.

These modern preventive medicine and public health aids were adapted to modern warfare with the result that no large epidemics or epizoötics appeared during or immediately following World War II. This was accomplished in spite of the fact that this was the greatest and most devastating war in the history of the world, with complete overthrow of many governments; with strict censorship that prevented the dissemination of all types of information for a period of almost five years; and with mass movements of armies, prisoners of war, refugees, displaced persons, and livestock.

This was possible because modern science has provided more effective weapons with which to protect men and animals against disease. These weapons included new and improved immunizing agents, drugs, and chemicals, the almost miraculous antibiotic agents, and improved sanitary and hygienic standards. A central agency, such as the Army, was necessary for the establishment of an adequate control program and to assure the availability of personnel, medical supplies, and administrative organization during the emergency period when battles were being fought, supplies lacking, communications disrupted, and local governments not effective.

Although the Army has practiced preventive medicine for a long time, it has only recently emphasized the importance of public health in relation to the military organizations and the surrounding civilian population. Previous experience revealed the need for an established public health program to assure a more successful military operation. This would mean assistance in preventing disease and disorder within the countries involved. In addition to providing the American soldier with adequate medical care and safe, wholesome food, precautions must be taken to provide a healthy environment for him by controlling diseases in the indigenous population and livestock among which he has to live and fight.

The importance of veterinary preventive medicine in public health has now been established, and it is a part of any modern and successful program of this kind. During World War II, a military public health organization became an integral and important part of Civil Affairs and Military Government. The terms Civil Affairs and Military Government are normally used to cover all types of military activities pertaining to civil matters. However, for operations in Europe, a definite distinction between the two terms was made. Civil Affairs was used to denote operations affecting our allied countries of France, Belgium, Holland, Denmark, and Norway. Military Government was applied only to operations affecting the enemy countries of Germany, Italy, Austria.

The primary object of Civil Affairs is to ensure that conditions exist among the civilian population which will promote, and not interfere with, operations against the enemy. Civil Affairs organizations relieve the fighting forces of civil commitments and make available to them such civilian resources as they may require to further the military mission. If abnormal conditions appear, if no recognized central administration exists or if the authority of a recognized one collapses, or if there is a complete disintegration of local civil government, then Civil Affairs agencies are called upon to reëstablish and supervise such responsibilities until the situation permits assumption of control by a recognized and competent civil authority.

The principal objects of Military Government are to ensure the security of the occupying forces, maintain good order, and develop the economic resources of the occupied territory. It controls the people of the country to ensure their future good conduct. Military Government is normally maintained until a treaty of peace comes into force.

Personnel of the Civil Affairs and Military Government organizations consisted of specialists in all fields of civil government. There were lawyers and judges to rewrite nazi laws and to head military courts; engineers to supervise the repair and maintenance of public utilities in bombed-out cities; medical and veterinary public health specialists; chiefs of police; fire-department heads; lumber, coal, and agricultural experts; city managers; former state governors and mayors; college professors to supervise education and help eradicate nazi creeds; experienced welfare workers

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to handle the millions of displaced persons; and art experts to recover the looted art treasures.

The veterinary activities of this organization were not only a part of public health but were closely associated with food and agriculture problems which had been given much consideration by Civil Affairs and Military Government. It was found that, in certain liberated areas, food supplies had been exhausted and such supplies were required immediately.

An aid program of this kind can be divided into three types: first, where Civil Affairs activities are conducted in a neutral country or on a base some distance from combat; second, where Civil Affairs operates in the combat and supply areas of liberated countries; and third, the activities of Military Government in an occupied country. The Veterinary Corps of the U.S. Army conducted activities of this kind in the three different types of situations and in all parts of the world during World War II.

CIVIL AFFAIRS IN A NEUTRAL COUNTRY

The Army veterinary service with the United States troops in Iceland is an example of the work performed in a neutral country or base. Members of the Veterinary Corps worked with the Icelandic Government, including the Department of Agriculture, Medical Research Board, Milk Control Board, Public Health Authorities, and the university scientists to improve the methods of milk production, livestock breeding, and animal sanitation, and to control animal diseases. Army veterinarians helped materially in improving the Icelandic milk supply. Dairy cattle were tested for tuberculosis and brucellosis. Dairy farm inspections were made and the advantages of producing clean, safe milk were demonstrated and taught to both the producer and the consumer. The importance of producing safe, high-quality milk and its relationship to good health and prosperity were stressed.[2] Strangely enough, the importance of keeping milk cold had to be emphasized on this Arctic island. Results of this program were satisfactory and appreciated. The Icelandic Government requested that this work be continued and that additional aid be given to control those animal diseases menacing the livestock industry. Aid was given to the farmers and veterinarians in controlling hog cholera. This disease, although common in the United States, had never before been recognized in Iceland. Experience was acquired by our Army veterinarians with several diseases uncommon in the United States such as Johne's disease and Jaagsiekte, both diseases killing thousand of Icelandic sheep annually.[1]

CIVIL AFFAIRS IN LIBERATED COUNTRIES

The reëstablishment and supervision of the veterinary service of a liberated or an occupied country was a new task assigned to the U.S. Army Veterinary Corps. In order to carry out our Civil Affairs responsibilities in foreign countries, we first had to become acquainted with each country or area we were to enter regarding its veterinary organization, livestock, animal diseases, methods of disease control, and laws pertaining to animal diseases and quarantine, and the types and locations of diagnostic and biologic laboratories.

The success of a public health program of this nature is wholly dependent upon the coöperation of the native population. Without it, little can be accomplished. Upon entering a country or area, our first duty was to try to reëstablish the local veterinary service as quickly as possible. Beforehand knowledge of the administrative organization of the government saved time in meeting the proper veterinary officials, acquainting them with our mission, and acquiring their coöperation and help, as well as that of the practitioners, in reporting disease outbreaks and establishing control measures.

Success in the control of animal diseases in any country or large area is dependent also upon an efficient reporting service. One must possess data of local disease situations in order to set up an effective disease-control program. European countries collect these animal disease data on a semimonthly basis. This information is consolidated for the country and usually distributed at the end of each reporting period. The reëstablishment of the reporting system was one of the initial steps taken and was considered one of the most important. During the emergency periods, military communication facilities were used to collect this information.[4]

Veterinary medical supplies were planned and provided for use during emergency periods of combat and postcombat. Serious shortages of veterinary supplies, caused by the German occupation and war requirements, were known to exist in the countries of northwest Europe. It was important that such emergency supplies be furnished at the proper time and place. These emergency supplies consisted of units of surgical instruments, drugs, dressings, laboratory units, and stockpiles of the common biological products known to be utilized within the area.

Numerous incidents occurred during, and immediately following, the war in which reported outbreaks of animal diseases were effectively controlled under this program

and procedure. Outbreaks of foot-and-mouth disease were reported during the fall and winter of 1944 in the Duchy of Luxemburg, along the eastern border of Belgium, and in the southeast corner of Holland. In the spring and summer of 1945, this disease appeared sporadically in the south-central part of Belgium and in the state of Andora between France and Spain. These outbreaks were controlled and prevented from spreading by providing these governments with the necessary vaccine and serum which were flown in from Switzerland, instruments and drugs from Army stocks, and by aiding in maintaining the necessary quarantine restrictions even in the combat zone. It was remarkable how well the combat units of the armies cooperated in carrying out the quarantine measures.

Swine erysipelas appeared seasonally and sporadically throughout the entire area. Biological products were secured from local sources and distributed by the Army to prevent the ravages of this disease. Sporadic outbreaks of hog cholera were isolated, almost at the point of origin, by the use of serum and quarantine.

After the emergency period, aid was given to the veterinary schools in the form of current veterinary literature and emergency supplies. Censorship imposed upon this part of the world for the duration of the war had prevented the exchange of technical information on veterinary matters. Through the help of the American Veterinary Medical Association, the Bureau of Animal Industry, and the American veterinary pharmaceutical companies, literature was obtained and turned over to these institutions.[3]

MILITARY GOVERNMENT IN GERMANY

The veterinary service of the Military Government of Germany was conducted somewhat differently from that of Civil Affairs. No imports or relief supplies were to be made into Germany except in extreme emergencies, and then only to the extent necessary to prevent disease or situations which might endanger or impede military occupation. This policy was adopted for economic reasons and to encourage self-rehabilitation.

Surveys were conducted to determine the current status of the veterinary service, the available supplies, laboratory facilities, the incidence of animal diseases, the disease reporting system, and the types of livestock.

One of the major activities initially conducted by the Army veterinary service was to assist in the denazification and demilitarization of German veterinarians. This was to be carried out according to the Potsdam Agreement within the limits of practicability and without endangering public health. Initial surveys indicated that about 80 per cent of the German veterinarians were involved one way or another with the nazi party. To have arbitrarily terminated at one time the service of all individuals tainted with nazi relations would have produced a dangerous condition resulting in a complete breakdown of the German veterinary service and loss of control of the spread of animal diseases. This would have endangered the health of the occupation forces as well as the German population.

Reëstablishment of the veterinary administrative organization under the Potsdam Agreement was extremely difficult. State officials, as well as laboratory directors, require specific training and much experience in order to discharge their responsibilities successfully. We were, however, fortunate in the U.S. Zone to have acquired intelligent, scientifically minded, experienced, and coöperative state veterinary officials. They conscientiously attacked the problems and were successful in helping to reëstablish the German veterinary service in the U.S. Zone.

Prior to the occupation, veterinary service for Germany was a highly centralized national organization. This service was administered from the Reichs Ministry of Interior. General laws were made by the Reichschancellor with the detailed executive regulations being prepared by the Ministry of Interior. Lower levels of government were allowed to deviate but little from laws enacted by the Reich. The administrative organization was very complete. Veterinary officials were located in the Reich (national), *Provinz* (state), *Regierungsbezirk* (district), and *Kreis* (county) administrations. State veterinary officials supervise all veterinary service within their area, including disease control, milk and meat inspection, abattoirs, veterinary laboratories, veterinary education, farrier schools, and even carcass disposal. Until 1934, the German veterinary service was under the Ministry of Agriculture, Lands, and Forestry. After the war, the administrative organization in operation in 1934 was adopted in several zones of occupation, but in the U.S. Zone, veterinary medicine is included in the Department of Public Health under the Ministry of the Interior.

Meat inspection is conducted at all municipal slaughterhouses by veterinary officials. In rural sections, where slaughter-

houses may not be present, the examination of meat is carried on by local veterinary practitioners who are appointed as officials responsible for their respective areas. In those areas where veterinary personnel are not available and where home and emergency slaughtering is necessary, this inspection service is maintained by lay personnel, qualified for this limited service by attending instructional courses and proving their proficiency by means of examinations. In all cases, however, meat inspection in Germany is carried on under state supervision.[5]

Veterinary milk inspection in Germany includes control of the health of dairy animals, and the supervision and inspection of the milk including sanitary conditions maintained during the processing. Veterinary laboratories make the necessary tests to determine the bacterial content of the milk and the health of the animal.[6]

Most of the veterinary laboratories sustained major war damage. Equipment was lost and destroyed, supplies were short or absent, and the number of technically and politically qualified personnel was small. Shortages of electricity, coal, expendable supplies, mediums, and glassware resulted in a very limited laboratory service. Emergency repairs were made immediately after the war in order that this service could conduct necessary tests.

During the occupation, laboratories were gradually repaired, limited supplies obtained, and additional laboratories established until the fall of 1947 when it was considered that adequate laboratory service was available throughout the U.S. Zone.

One of the largest biological production establishments in Europe is located in the U.S. Zone of Germany, the Behringwerke, at Marburg. Prior to the war, it provided over 80 per cent of the medical and veterinary biological products used in Germany. Large amounts of these products were exported to many parts of the world. This plant suffered no war damage. As a part of the gigantic I. G. Farben Company, it was placed under U. S. administration. Military Government Veterinary Corps officers maintained technical supervision over this establishment.

Previous to the collapse of Germany, foot-and-mouth disease vaccine was produced at the State Research Institute on the island of Riems. Vaccine was distributed from there throughout Germany as it was needed. At the end of the war, it was learned that the Russians had dismantled this laboratory, removing the equipment to their own country. Steps were immediately taken by the U.S. Army veterinarians to initiate the construction of a vaccine institute in the U.S. Zone for the production of this product. Many difficulties were encountered in obtaining building materials, necessary laboratory equipment, and labor. This project has been completed, and vaccine is now being produced in the U.S. Zone. The slaughterhouses at Offenbach and Hoechst are utilized for the production of crude viral tissue. This material is then transported to the Behringwerke at Marburg where vaccine is prepared and distributed as needed.

The Behringwerke laboratory has developed a very succesful virus-typing service to determine the type of virus involved in each outbreak of foot-and-mouth disease. This procedure is extremely important to combat this disease successfully by the use of vaccine.

Stocks of laboratory animals necessary for the many tests conducted by this large biologic plant had been depleted during the war years. In the fall of 1946, several thousand guinea pigs, rabbits, and white mice were purchased in Denmark by Military Government and transported by air to this laboratory.[6]

Before the war, veterinary colleges were in operation in Berlin, Hannover, Giessen, Leipzig, and Munich. Munich was closed in 1939. The Army Veterinary School was located at Hannover. During the war, the quality of veterinary education was lowered due to the lack of qualified teaching personnel, the loss of equipment, and the shortening of the curriculum. All veterinary schools suffered major war damage. Soon after the war, the veterinary school at the University of Giessen was opened by Military Government in order to keep the instructors occupied and discourage the highly skilled personnel from seeking other fields of endeavor.

Difficulties were encountered with shortage of politically and technically qualified personnel, shortages of equipment, insufficient space, inadequate supplies of light and heat, lack of adequate living conditions for students, and insufficient financial support. Loss of instructional material was a major problem. During the occupation, the veterinary section of Military Government aided this school by providing veterinary and other scientific journals, papers, and pamphlets. Help was given in securing building materials and lending moral support to the instructors who very courageously began the gigantic task of reëstablishing the institute to provide adequate veterinary education in the U.S. Zone. All able-bodied students were required to work 100 hours each semester in salvaging material from the damaged school buildings

and helping in their reconstruction. At the end of 1947, there were still shortages of qualified instructors and much repair work still remained to be done.

Postgraduate instruction is also provided by these institutes. In addition to this form of education, further training is presented from time to time throughout the German states in the form of short courses, refresher courses, instructional courses, and lectures on such subjects as diagnostic procedures, improved methods of treatment, disease control, and veterinary jurisprudence. These courses are conducted for state officials, candidates for government service, meat and trichina inspectors, and practitioners. This type of instruction is presented by the veterinary schools, state and private veterinary laboratories, and agricultural institutes.[6]

REPORTABLE ANIMAL DISEASES

Prior to the war, Germany, like many other European countries, had a very efficient and detailed animal disease reporting system. Disease statistics originated from the farmer, the butcher, the general practitioner and the *Kreis* or *Stadtkreis* veterinary official. The *Kreis* officials reported initial outbreaks by the quickest means possible (telephone, telegraph) in order that the Ministry could take the necessary action. Prior to the occupation, animal disease statistics were forwarded through administrative channels to the Reich's central office in Berlin, where they were consolidated, published, and distributed for the whole country. At the present time, these data are consolidated for the western zones of Germany at Frankfurt.

Veterinary officials are responsible for initiating and supervising the control measures and quarantine restrictions necessary for combating diseases in their respective areas. During the latter part of, and immediately following, the war, the incidence of communicable animal diseases increased. This was due to the lack of organized control, absence or displacement of veterinary officials and practitioners, shortage of supplies, and lack of transportation and communication facilities. The movement of people from one zone of occupation to another and the influx of expellees with their livestock from countries bordering on the eastern part of Germany contributed to the increase and spread of such diseases.

The incidence of all important reportable animal diseases decreased during the two years following the war. This was attributable to the reëstablishment of the German veterinary service, increased biologic production, distribution of limited amounts of veterinary supplies, reëstablishment of veterinary diagnostic laboratory service, reestablishment of the disease reporting system, and the use of effective measures of quarantine and restriction of animal movements. The current incidence of most animal diseases is generally low and comparable to the situation in the prewar years.

Brucellosis of Cattle.—Brucellosis is a problem in Germany; however, its true incidence is not known because no systematic testing programs have been carried out. Land Hesse has recognized it as one of the major causes of sterility in breeding cattle. The use of a live culture vaccine for the control of this disease was not permitted in Germany prior to the occupation, but its use has now been approved in the western zones of Germany. The U.S. Army Veterinary Corps, through the coöperation of the Bureau of Animal Industry, U. S. Department of Agriculture, imported cultures of strain 19 for use in the production of a protective vaccine against brucellosis.[7]

Dourine and Glanders.—Although absent in Germany for a number of years prior to the war, dourine and glanders were introduced into the country during the latter part of the war by horses of German military units that withdrew from North Africa, Italy, Poland, and the Balkans.

A zone-wide program for the testing of all horses for glanders was carried on throughout the U.S. Zone, and was soon adopted by the other zones of occupation where the disease appeared. In the U.S. Zone during the first two years of occupation, 363,951 tests were made for glanders. Ninety-six horses were found to be infected and were destroyed. Repeat tests are being conducted of all horses, and it is planned to continue this eradication program to completion. One human death from this disease was reported in Bavaria in 1947.

The appearance of dourine in the breeding stock in a number of localities in Germany, and especially in the Soviet Zone, brought about a similar zone-wide testing program.

Encephalomyelitis or Borna's Disease.—Encephalomyelitis caused no serious trouble in Germany. It is confined to the southwest part of the Russian Zone with isolated cases being reported in Wuerttemberg-Baden and the western part of Bavaria. A satisfactory vaccine is produced in Germany for its control. Borna's disease appears seasonally during the summer months. The cause of spread is unknown.

Erysipelas of Swine.—This increased greatly after the war, because during the usual spring vaccinating season in 1945, the country was being overrun by the Allies. Distribution of swine erysipelas antiserum

was made by Military Government veterinary officers as soon as possible after the war. The incidence of this disease has declined materially each year during the occupation, to a point where only the normal annual incidence is now reported. During the 1947 season, there was a shortage of swine erysipelas antiserum throughout Germany because many horses in the serum-producing plants were found infected with equine infectious anemia and were destroyed.[5]

The work of Dr. Erich Traub, an outstanding German veterinarian and scientist, resulted in the production of an effective vaccine, adsorbed on aluminum hydroxide. This vaccine presents an advantage over the simultaneous method, since it does not contain live organisms.

Foot-and-Mouth Disease.—This disease appeared in the U.S. Zone during the first years of occupation in one large outbreak covering two *Kreis*, and in several small, sporadic outbreaks. Each outbreak was brought under control through strict quarantine and use, in several instances, of immune serum. The epizoötiologic studies of each outbreak indicated that the disease was introduced by unsupervised importations of livestock from the British Zone, where the disease was prevalent in epizoötic proportions. To ensure against the future introduction of foot-and-mouth disease, as well as any other disease that might be imported with livestock, regulations were effected requiring veterinary supervision of all animals brought into the U.S. Zone. This supervision included veterinary examination at origin and destination, a quarantine period, and a veterinary health certificate showing the results of the diagnostic tests required by the German law. This interzonal livestock restriction was later adopted by the Veterinary Subcommittee of the Allied Control Authority and used throughout the four zones of Germany.

During 1948, foot-and-mouth disease appeared throughout Germany in epizoötic proportions. Since the beginning of 1949, it has declined in incidence and is now under control. To prevent and control future outbreaks of this kind, additional laboratories are now being planned throughout the western zones of Germany in order that large quantities of vaccine can be produced and made available in a relatively short time when necessary.

Newcastle Disease (Fowlpest).—Newcastle disease (avian pneumoencephalitis) made its first appearance in the U.S. Zone in Bavaria and spread to large areas in that state. An effective adsorbent-type vaccine was available and has been used successfully in controlling the disease by establishing a *cordon sanitaire* around the infected areas. All flocks of chickens in these areas were required to be inoculated. On several isolated farms, the disease appeared after the flocks had supposedly been immunized. Investigations of these conditions revealed that on these farms the entire flock had not been submitted for the protective treatment, the owners suspecting Military Government and the German authorities of using this control program as a means to obtain a census of the number of chickens on the farm.

Similar experiences were reported in connection with other disease-control programs.

Equine Infectious Anemia.—This disease has increased throughout Germany, having been spread materially by the uncontrolled distribution of German army horses immediately following the war. Large numbers of animals in the biologic plants of Germany became infected and had to be destroyed.[5]

Equine Scabies.—Equine scabies was one of the most prevalent animal diseases seen in Germany during the first year of occupation. The unrestricted movement of animals during and immediately following the war, together with the shortage or absence of necessary chemicals, transportation facilities for gas chambers, and dipping vats, caused the spread of this disease. Segregation and quarantine, in conjunction with substitute drugs, were measures used to combat this disease. A decline in the incidence began in the fall of 1946 and continued until the summer of 1947 when the disease had practically disappeared from the U.S. Zone.

Scabies of sheep and cattle has been reported sporadically in the U.S. Zone during the occupation but has caused no serious trouble.

Swine Fever or Hog Cholera.—This disease has appeared sporadically. Epizoötiologic studies have shown that most outbreaks result from the feeding of uncooked garbage. This has been brought to the attention of the German authorities and farmers by radio, newspaper, and official publications with the recommendation that all garbage be cooked before feeding it to pigs. Unfortunately, this disease has spread to the wild boars in certain areas which may act as reservoirs of infection. The German veterinary authorities were reluctant to use the American method of simultaneous treatment for controlling this disease. Their hesitancy was appreciated by the American veterinarians, who, however, introduced into Germany the crystal-violet type of hog cholera vaccine. The

sporadic outbreaks of hog cholera that appeared from time to time involved only a small number of pigs and were usually controlled by the slaughter and disinfection method.

Trichomoniasis.—Trichomoniasis has increased during the occupation. This may be due to the lack of adequate controls for breeding animals and, lately, to increased interest in, and a more frequent recognition of, the disease. Steps to control this disease, include coöperative programs between the breeding associations and courses of instruction for practitioners in diagnosis, treatment, and control measures.

Bovine Tuberculosis.—Widespread throughout Germany, the incidence of bovine tuberculosis varies from 30 to 60 per cent. Since only open cases of tuberculosis (infection of lungs, udder, uterus, and intestines) are reported in the semimonthly disease reports, the true incidence of the infection is not reflected in these reports. The economic conditions in Germany, the established and age-old customs of animal husbandry, the voluntary basis of control, the lack of veterinary equipment, the shortage of transportation facilities, and the absence of adequate finances make the control of this disease a major problem. The public health significance of this disease has increased during the past ten years. Milk processing equipment, especially pasteurizing machinery, is old, worn, and in need of major repairs or replacement. Extreme shortage of fuel has often been a cause of improper pasteurization. Radio, newspapers, and posters have emphasized the dangers that exist in drinking raw milk and have stressed the necessity of adequately heating milk at home before consumption. Limited control measures have been started in the U.S. Zone on this gigantic problem, and uniform measures for effectively controlling this disease in western Germany have been recommended and encouraged by the veterinary service of Military Government.

SUMMARY

The German veterinary service has been reëstablished under approved United States policy and in accordance with the Potsdam Agreement. It is carrying on its responsibilities in the fields of preventive medicine, public health, and economics. The profession will continue to improve its activities as the many shortages of supplies and transportation facilities are remedied. German veterinarians are already presenting important contributions to the world's knowledge in the field of disease control.

Experience acquired by U.S. Army veterinarians in Civil Affairs and Military Government assignments has been interesting and should be useful for a better understanding of the problems and customs that exist within the livestock industry and veterinary profession of other countries of the world. In some instances, first-hand experience was gained with many exotic animal diseases heretofore little understood in the United States where many of the serious animal plagues do not exist. This experience may prove helpful to our national security in this atomic age where disease knows no national boundaries and may spread with the speed of the airplane.

U.S. Army veterinarians have had many opportunities throughout the world to aid war-torn countries in the rehabilitation of their livestock industry, and, in some cases, they have aided in reëstablishing the veterinary service, especially during the emergency periods of combat operations. Army veterinarians are continuing this type of foreign aid program in many parts of the world. American methods of disease control, milk production, laboratory procedures, and education are demonstrated and taught. As representatives of the American veterinary profession, such activities on the part of the Army veterinarian can do no less than foster good will.

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Examination and Care of the Genital Tract of the Brood Mare

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WE HAVE three reasons for examining the genital tract of the brood mare: to determine the breeding health of the individual, to decide the most opportune time for the sexual act, and to diagnose pregnancy. We start our examination by a careful scrutiny of the vulva and the surrounding area, including the tail and buttocks. If the mare is discharging from the vulva, it will be matted in the hair of the tail and stuck to the hair over her buttocks, as well as being dried on the lips of the vulva itself. Since my work is confined to Thoroughbred mares, the Caslick vaginal speculum is used for vaginal examinations. The mare is placed where the light falls on the external genital organs while she is being prepared for examination. The tail is bandaged about 7 in. from the dock to keep the hairs away, and the entire perineal region is washed with a mild soap; the soap is all rinsed away with warm water containing a nonirritating antiseptic. The region is now dried with absorbent cotton which has been wet in the antiseptic solution and squeezed dry. The lips of the vulva are then parted and the antiseptic solution is tossed into the opening from a piece of wet cotton. The interior of the vulva is again dried. The vulva is now examined for conformation, that is, for the angle of the vulva and its relation to the anus, the relation between the upper commissure of the lips and the floor of the pelvis, the thickness or thinness of the lips, the tone of the labial muscles, the position of the urethral orifice and the position and thickness of the transverse fold. Since the vulva furnishes the only absolutely fixed contact of the genital canal and serves to close this canal, its importance cannot be overstressed.

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"Wind-sucking" in mares, the aspirating of air into the vagina through the vulva, is without doubt the most common cause of sterility in Thoroughbred mares. Its detection and correction is all-important. The conformation which is most conducive to this habit is that of a vulva which is partially horizontal or where the anus is forward in the perineal region, pulling the vulva forward; or one in which the perineal region appears to sink forward between the buttocks. This, coupled with thin lips and lack of tone in the labial muscles, is almost bound to be accompanied by wind-sucking. Wind-sucking is most often detected by the sound of the air entering or leaving the vagina. It varies from a smacking sound to a gurgling noise. I have heard Dr. W. W. Dimock describe it as a "garrulous vulva." The lips may turn in, giving the impression that the vulva is being pulled into the vagina. The lips of the vulva may not be in direct apposition, the one seeming to set behind the other. This condition can exist, however, in a mare with normal angle to the opening of the vulva, even though the lips be thick, if the union of the lips at the upper commissure extends above the floor of the pelvis and the labial muscles are relaxed.

The ideal vagina is a large one with thick well-muscled lips—one in which the superior commissure is below the bony floor of the pelvic outlet, the angle of which is about 80 degrees; one which continues upward to the anus without change in angle and in which the entire region lies almost flush with the buttocks devoid of depressions. The mare with a flat croup will almost invariably have a "high tail set" accompanied by an anus which is pulled forward showing a deep depression on either side, this seemingly drawing the vulva upward and forward until it reaches an angle of from 45 degrees to almost horizontal.

The real evidence of wind-sucking is seen when the speculum is inserted in the vagina. The mare is now turned in the stall so her

perineal region is in the shadow. Too much natural light makes the examination difficult. The vagina may be ballooned, with tense, congested walls. The cervix may even stand open as a ring, permitting the examiner to look into the body of the uterus and see the openings of each horn. This of course is unusual, although I have seen many such cases. More often, a cervicitis with a foamy exudate on the floor of the vagina will be seen. Also, particles of dirt and even manure are frequently present in this foam. When cultured, these animals are always positive. There are many mares, though, about which a reasonable doubt exists as to whether or not they are aspirating air. These animals, when examined while not in heat, will present a tightly closed vulva and when examined with the speculum will show a closed cervix, but the walls of the vagina and the cervix will be reddish pink and moist. During estrus, this same mare will show all the evidence of wind-sucking. This is made possible by the relaxation of the labial muscles. If wind-sucking is found in a mare, the condition should be corrected at once. If doubt exists, it is wise to close the lips of the vulva with temporary Michel clips and after a week has elapsed remove the clips and reëxamine the mare. If not sure, replace the clips and examine again a week later. If the mare is aspirating air, the change in the appearance of her vagina after such a test will prove it conclusively.

SUTURING THE LIPS OF THE VULVA

The vulva is thoroughly cleansed with soap and water. Since the lips are to be closed to a point 1/2 in. below the floor of the pelvis, the lowest point to be closed is determined and the first injection of a local anesthetic is made there. A second injection is made at once exactly opposite in the other lip to insure uniform relaxation. The injection is then completed to include the upper commissure of the vulva. When the anesthetic has taken effect, the scarification of the lips is accomplished. With a Bard-Parker knife, a line incision is made just through the skin and on the edge of the lips from the top of the commissure to the lowest point to be closed. This skin is grasped with a pair of mosquito forceps on the inner surface of the lip and a sliver of tissue dissected away about 1/8 in. wide and just deep enough to make it a raw surface. This is repeated on the opposite lip with the scarified surface equal on both. The edges are now grasped between the thumb and index finger and pressed thin. Start at the bottom and bring these raw surfaces together with 18-mm. metal-wound clips. The clips are seated about 1/8 to 3/16 in. apart. The area is covered with yellow oxide of mercury ointment, and 1,500 units of tetanus antitoxin is always administered.

The animal is checked in forty-eight hours to determine whether any clips are too tight. If any pressure sloughing is taking place, every other clip is removed. All clips are removed in five days. Since the vulva must be opened for foaling and, in tightly sutured mares, for service, and each time must be immediately resutured, it is evident that the thinner this closure, the more perfect the operation, as long as it excludes air. Many mares are sutured their first year in the stud and resutured repeatedly during their brood mare lives.

Care must be exercised in examination of the vulva at this time to keep from opening the newly healed area. To prevent damage at time of stud service, a cross stitch is placed in the vulva. This stitch should be placed about 1/4 in. above the bottom of the newly closed area and the needle should enter and leave the vulva about 3/8 in. from the median line. Size 2 or 3 braided silk, used double, is most suitable with the needle of your choice. The stitch is tied loosely to allow for the stretch of the tissue. Too wide and deep a cross stitch is more apt to tear. The cross stitch is removed immediately after the service, but must be replaced each time the animal is bred, or for vaginal examination if a large speculum is used. The glass cylinder speculum, 1 5/8 by 15 in., works well on sutured mares, using a flexolight for illumination. Sutured mares must be watched closely as foaling time approaches, and the vulva opened to its original size. The incision can be made either with a probe pointed bistoury or with a pair of straight scissors. The closer the time of foaling when the vulva is opened the better, but it may be done days before without serious effect.

The morning after parturition, the vulva is resutured, using either catgut, dermal suture, or metal clips. Cross tears should be closed with dermal suture. If they are neglected and the lips resutured with metal clips, small openings are apt to remain where the lips were not in complete apposition. The necessity for this operation may be found in any mare—pregnant, barren, or maiden.

In order that the examiner may not be confused, it is necessary to examine the mare during diestrus to learn the condition of her vagina and cervix. The normal mare, when examined midway of her diestrous period, will present a tightly closed cervix; the vagina wall and cervix will be pale to white in appearance, and the vaginal

walls will be collapsed. When the speculum is removed, it will be dry and covered with a thick, sticky mucus. As estrus approaches, this mucus becomes softer and finally disappears. The cervix must be examined for tears, lacerations, and scar tissue. Any deviations from normal in the cervix make the mare unsound for breeding purposes. The presence of exudate in the vagina, *i.e.*, a moist vagina, and the redness of inflammation are indicative of infection, and it is wise to culture the mare to determine just what the infection is. Since redness and exudate are normal in estrus, it is readily seen why the examination for breeding health cannot be made during this period. The variation between the collapsed vagina with the dry, sticky mucus and the angry red cervix and congested vagina showing pus-filled exudate is wide; the condition which we call normal breeding health lies between these two extremes.

Much experience is necessary before a decision can be made as to the breeding health of an individual based on the observations of one examination. If the animal is in perfect health, it can be determined in the first examination, but usually it is necessary to make two, three, or several examinations. If the animal is in heat, the examination is wasted, and it is necessary to reëxamine to learn what changes are taking place in the sexual cycle. If the cervix is closed and free from evidence of scar tissue, and the vagina is dry and free from congestion, it is safe to assume the mare is free from genital infections.

Any deviation from the above must be diagnosed and the course of treatment decided upon. A rectal examination of the uterus and ovaries must be made to determine the size, tone, and position of the uterus, its freedom from neoplasms and the size, consistency, and freedom from cysts and neoplasms of the ovaries. An obstetric sleeve and rubber glove is used. The uterine horns should be equal in size, or nearly so, and should be firm and elastic to the touch. The flabby, toneless uterus always makes a breeding mare a bad prospect. Mares with chronic metritis should never be bred. The tumified ovary is always bad, but mares conceive from one normally functioning ovary. The cysts on ovaries come and go. The small, hard, fibrous ovary is least apt to function. The entire genital tract must be evaluated, and the decision as to breeding health must be made after careful consideration of all observations. Consideration must be given to the status of the mare, whether she be maiden, a barren, or a foaling mare. The preceding statements apply to the maiden and barren mare, although they do overlap. The examination of the vagina of a pregnant mare should always reveal a tightly closed, sealed cervix with pale collapsed walls, and the speculum should always carry the thick, sticky mucus when withdrawn. I say "should," but we do not always find it so. Pregnant mares are sometimes messy, but there is always a reason, usually wind-sucking.

DETERMINATION OF ESTRUS

I believe a close correlation exists between ovulation and true estrus, as determined by vaginal examination. Again, in making this examination, we start by observing the tail at the point where it covers the vulva. It should feel damp to the touch. The vulva should be relaxed, that is, the lips should be thinner than when not in heat, and the distance from the superior to inferior commissure should be greater. This is not always true, however, as mares may be in perfect heat and the vulva remain contracted. A clear lubricous exudate may drip from the vulva. The vaginal examination at this time must be made with a dry speculum in order to determine the degree of resistance to the insertion of the speculum as well as to its withdrawal, and the type of exudate which clings to it after its removal. A dry vagina invariably means a diestrus period. The mare in estrus will show some degree of congestion in the mucous membranes of the vagina. It helps to know the mare, as this congestion varies from mare to mare and from time to time. The membranes should be pink and glistening. A slight amount of clear mucus will usually be found in the vagina but there is variation in this, also.

The cervix should be congested but relaxed. Some slight edema of the lips of the cervix is common. An angry red or streaked appearance of the cervix is indicative of inflammation resulting from infection. To quote from Dr. Charles E. Hagyard, "When the cervix looks like an American beauty rose in full bloom, the mare is in heat." Often the examiner will be in doubt as to the exact condition of the cervix and the quality of lubricant in the vagina from the use of the speculum and will find it necessary to examine manually. A long-sleeved rubber glove should be used. If the membranes are moist and well lubricated and the cervix is open, all doubt should be dispelled and the mare considered in heat. In making the speculum examination, the observation should be made at the moment the speculum is opened. The instant the air strikes the membranes, congestion is increased and any delay changes the true picture. In making routine examinations to determine the heat periods of mares that do not show to the teaser, it is best not to in-

sert the speculum more than twice a week. The repeated ballooning of the vagina with the speculum is apt to produce the same condition as that resulting from wind-sucking.

EXAMINATION FOR PREGNANCY

Maiden mares may be examined to diagnose pregnancy at the fortieth to the forty-second day after service. Barren mares with perfect genitals may be examined as early, but it is usually better to wait until the forty-third to forty-fifth day. Foaling mares should be delayed until the forty-fifth or even the fiftieth day. This is more necessary if the mare has been bred back on the ninth day after foaling. This examination must be made with great care and gentleness. The cervix is located and the uterus followed forward to the bifurcation. With the palm downward, the fingers are crooked backward with the horn of the uterus lying between the fingers and the palm of the hand. The hand is then moved to the left palpating the uterus to the tip of the left horn, then returning the same way to the bifurcation and proceeding to the tip of the right horn. If the mare is pregnant, the horns will show great tone and a distinct bulge will be felt. If the pregnancy is in a horn, this bulge will be in the form of a pouch or enlargement which springs from the lower half of the horn. If the pregnancy is in the body of the uterus, it will be much more difficult to diagnose and two or more examinations will probably be necessary. It is also quite common to find an offset or kink in one horn of the uterus of a pregnant mare. The wall of the uterus will be much thinner and free from tension over this bulge.

I have been fooled by an air pocket forming a bulge in the horn of the uterus in a wind-sucking mare. Reëxamination of mares in ten days will eliminate mistakes. A sealed cervix with a sticky mucus covering the vagina walls is strong supporting evidence of pregnancy at this time, also. Increase in size of the pregnant horn, with continued tone in the nonpregnant one, since the last examination will be sufficient proof of pregnancy. In cases of metritis, there is a feeling of tension when the uterus is palpated and the horns are usually about equal in size with a noticeable increase in the size of the body. At 120 days, the fetus can be palpated in the uterus. By exerting light pressure on top of the pregnant uterus and immediately releasing the pressure, the fetus will float to the top and bump the examiner's hand gently.

The uterus moves forward into the abdominal cavity from this time, and examination is increasingly difficult. When reexamining a mare already diagnosed as pregnant, if the cervix can be located and the uterus seems to disappear into the abdominal cavity, I never hesitate to say the mare is still pregnant. This situation continues until the fetus has reached a size which makes palpation again possible by rectum.

CARE OF THE FOALING MARE

I cannot stress too much the necessity of having a qualified attendant present when a mare foals. The discovery of a faulty position or posture of the fetus at an early time in parturition will make its correction possible. This correction will not only save the life of the foal but will avoid damage to the maternal genital tract which will increase the mare's chances of early breeding, if not save her as a brood mare. The most difficult thing in the foaling stall is to refrain from applying traction to a foal which is entering this world in a perfect physiologic birth. Untold damage is suffered by mares by this unnecessary help. I do not mean to say that help should never be given. When obstacles to birth are present, they must be overcome quickly or the foal will be lost.

I believe the mare should be given every opportunity to clean herself before an afterbirth is removed manually. I ordinarily wait twelve hours before attempting to remove the placenta and, if it is resistant, I wait longer. Posterior pituitary extract has been recommended in retention of the fetal membranes. In removing the membranes manually, the operator should work from inside the chorion, never coming in direct contact with the uterine wall but separating the membrane from the uterus by massage through the membrane. No mare which retains her afterbirth more than three hours is bred back in her first estrus.

As has been previously stated, mares with sutured vulvas which have been opened to foal are resutured the next morning after foaling. All damage to vulvas, regardless of whether they have been previously sutured, is repaired at time of this first examination.

Exercise is most important to the mare at this time, as it will help her to cast off the exudate which accumulates in the vagina, and it seems to aid in the normal involution of the uterus. The mare and her newborn foal should be in a paddock for fifteen or twenty minutes in the morning and again in the afternoon of her first day after foaling, weather permitting, and this time is increased day by day. Mares that are confined because of weather conditions, sick or injured foals, never return to normal

as rapidly as those which are able to exercise properly. On the sixth day after foaling (we count the day of foaling as the first day), that is, five days after resuturing in sutured mares, a vaginal examination is made. This examination is the most important one of the year to the brood mare. At this time, one must decide whether the mare will be bred back in her first heat period (the ninth day after foaling) or be passed over to the second period. A mistake at this examination will make all the difference in the mare's chances for producing a healthy foal the next year or producing a diseased foal, or she might abort or even become infected herself.

The mare should not be bred in her first heat period unless the involution of the uterus is complete, all lacerations resulting from parturition are completely healed, bruises, especially on the cervix, have completely recovered, the mucous membranes of the vagina have regained their normal pink color, the walls of the vagina have regained their normal muscular tone, and the vagina is free of exudate and urine. If the examiner is in doubt at this time, a reëxamination can be made on the eighth day and the decision made then. If any doubt exists as to whether the mare should be sent to the stallion in this first heat period, the benefit of the doubt should go to the mare, and she should be passed over this period.

Mares which are passed over the ninth day are reëxamined on about the eighteenth day to determine their fitness for breeding in the second heat period. This period can be expected about the twenty-seventh day after foaling, although it may appear as early as the twenty-fourth day, or as late as the thirty-second day. At this examination, the uterus should be completely involuted, the cervix closed and free from all evidences of injury; the vaginal walls should be pale and dry, and the speculum should meet resistance at the constriction between the vulva and the vagina. Mares which by past performance are known to fail to show their desires to the teaser, and mares of unknown teasing habits, are examined twice a week with speculum, starting on the twenty-fourth day and continuing until estrus is established. Mares that do not show their desire to the teaser and must be found in estrus by vaginal examination are spoken of as "speculum mares."

We often find mares at the peak of estrus with the vulva so relaxed that air is aspirated and the vagina ballooned. These same mares have normal vulvas during the diestrual period and permanent suturing is not necessary. To overcome this condition, temporary metal clips are placed in the vagina to prevent wind-sucking. They are removed for the stallion service and immediately replaced and left in position until the mare has gone out of heat. If the mare is still in heat on the sixth day, the clips are removed regardless of her cycle.

VACCINATIONS

Infectious equine abortion can be prevented by the use of the *Salmonella abortivo-equinus* bacterin. To gain an immunity which will protect the mare for the entire gestation period, a series of 3 injections, as prescribed by the makers, at seven-day intervals should be given during the fourth month of pregnancy and repeated in the ninth month. In recent years, virus abortion has been responsible for many losses. A vaccine has been developed at the Kentucky State Experiment Station which has been most successful in protecting against this disease. All large groups of pregnant mares should be protected against this disease.

INTESTINAL PARASITES

The methods for protection against intestinal parasites and the treatments for freeing mares of intestinal parasites will not be covered in this paper, but the fact remains that if a foal is to be free of strongyle infection, it must run on pasture which is not contaminated, and this situation can only be possible if the dam is free of infection.

CONCLUSION

In conclusion, I would like to cover briefly the routine procedures in the brood mare section of a Thoroughbred nursery.

Just before weaning time in the fall, all mares are again examined for pregnancy and the pregnant mares set up for their winter quarters. The barren mares are given a thorough examination at this same time and notes taken on their condition. The barren mares will be moved to their winter quarters, those requiring corrective measures will be assembled at a barn which will be most convenient for this work. The earlier those corrections are made, the better chance of getting the mare into good breeding health before the next breeding season starts. The teasing of all barren and maiden mares is started at least one month before the opening of the breeding season. This is to establish the sexual cycle in each mare before the season opens. Mares are not bred until they come in heat, "go out," and come back in estrus again. It is wise to wait for mares with the long estrus to go out and come back, before

breeding them the first time. All mares are examined with the vaginal speculum to check their status in the sexual cycle before they are booked for service. The mare should not be bred the same day she has been examined with a speculum.

Exact records are kept of the sexual cycle and breeding dates. Mares are examined for pregnancy as early as possible in order that those which have failed to conceive can be given extra attention in finding them in estrus again. These are the speculum mares, although every nursery has barren mares and even maiden mares which will not show to a teaser, and they are all in the same category.

When the mare is found ready for service, she is booked to the stallion and then at the appointed time she is taken to his court. Here, again, she is teased to cause a complete emptying of the bladder before the service; her tail is bandaged and her external genital organs thoroughly washed with warm water and soap. The area is then well rinsed with warm water. If a cross stitch is required, it is placed in position at this time. It is removed after the cover. If the external genital organs are too relaxed, temporary clips are used to close the vulva before the mare leaves the breeding shed. And, thus, the cycle repeats itself.

Hemolytic Icterus—Anemia of Newborns

Studies of the Rh factor in domestic animals had its origin in investigation of a prevalent disease of high mortality among newborn mules in southern France. It was thought to be associated with the "hemo-incompatibility" of hybridization. Bruner, Hull, Edwards, and Doll (J.A.V.M.A., June, 1949) and Brion (*Rev. Méd. Vét.*, May, 1949) describe the counterpart in mare-stallion offspring. The facts disclosed in both of these references are based on extensive observation, and in both papers their findings are compared to those of the Rh factor of human beings.

These observations appear to be opening a new approach to the nebulous problem of anemia of newborn animals, a subject of the first rank in animal production.

Persistent Lactation.—Painful or alarming lactation in dams deprived of their suckling young will usually respond to hypodermic injections of diethylstilbestrol daily for a few days. Topical application of camphorated oil to the congested udders is a favored adjuvant treatment.

Vitamin B_1 Deficiency in a Cat A Surgical Case

On Oct. 27, 1948, a mature female cat was brought into the University of California veterinary clinic for a hysterectomy. The animal was apparently healthy and had weaned a litter of kittens three weeks before.

At 9 a.m., she was given 1.4 cc. of a solution containing 1 gr. of pentobarbital sodium per cubic centimeter in a solvent of alcohol, propylene glycol, and water, with moderately deep anesthesia resulting. The uterus appeared normal in all respects when removed. After the operation was completed, the animal was placed in a recovery cage.

At 2 p.m., the animal was in a state of very deep narcosis and was given 1 cc. of coramine (Ciba) intramuscularly. One and one-half hours later, 10 mg. of benzedrine sulfate was administered intramuscularly as there was only a slight response to the coramine. At 6:30 p.m., the animal was apparently recovering from the anesthesia and was alert.

The next morning at 8 a.m., she was still alert but was unable to sit up. At this time, she was given 50 cc. of 10 per cent glucose in 0.85 per cent saline, intraperitoneally. One hour later, she was in a very deep narcosis and no palpebral or sciatic reflex could be detected. She was then given 1 cc. of coramine and 2.5 mg. of benzedrine sulfate, intramuscularly.

By 11 a.m., there had been no response to the coramine and benzedrine sulfate. Respirations were very shallow, pulse flabby, and the extremities were cool.

At 1:30 p.m., 5 mg. of benzedrine and 1 cc. of coramine were administered intramuscularly and 10 cc. of bovine serum albumin, intravenously. One hour later, there was a slight response and the breathing was deeper and the pulse stronger. By 4 p.m., she had slipped back into extreme narcosis, the pulse was weak, respirations very shallow, extremities cold, and she was becoming dehydrated.

At this time, 10 per cent dextrose in 0.85 per cent saline was given intravenously. After 45 cc. had been administered, the respiration stopped, and the animal was removed from the table and swung vigorously by the hind legs until respiration started again. She was then given 2.5 mg. of benzedrine sulfate.

Lepkovsky *et al.*[2] found that the glucose tolerance of rats increased as the avitaminosis B decreased. In 1935, Vorhaus[4] and his coworkers found that in a series of 11 cases of proved diabetes mellitus, 6 showed an increased carbohydrate utilization when they were given 10 mg. of crystalline vita-

min B_1 for twenty-eight consecutive days. A hyperglycemia and glycosuria in depancreatized dogs which did not respond to insulin but were cured by thiamin plus riboflavin was reported by Martin.[3] Gaebler and Ciszewski[1] found that the minimum dose of insulin was insufficient to control glycosuria unless the diet was supplemented with brewers' yeast. The effects of yeast could be duplicated by feeding seven of its known constituents: thiamin, riboflavin, nicotinic acid, inositol, pyridoxin, pantothenic acid, and para-aminobenzoic acid.

Since there is evidence to show that vitamin B is involved in carbohydrate metabolism, it was decided that the glucose tolerance of the animal might be low due to vitamin B_1 deficiency, because dextrose had depressed the animal rather than revived her.

For this reason, 1 cc. of a solution containing 100 mg. of thiamin hydrochloride per cubic centimeter was given intramuscularly. The animal was still in deep narcosis at 10 p.m., but the breathing was deep and regular, the pulse was strong, and the extremities had begun to warm up.

At 8 a.m. the next morning, the patient was awake and drank water and milk but was unable to sit up. Improvement continued, and by 4:30 p.m. she was able to stand but was very weak and coördination was poor. At this time, she was given another 100 mg. of thiamin hydrochloride and 200,000 units of penicillin. She was discharged.

Three days later, the patient was returned to have the skin sutures removed, at which time she appeared to be normal in all respects. Recovery was complete and uneventful.—*T. J. Hage, D.V.M., M.S., Department of Veterinary Science, University of California, Davis, Calif.*

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Blood-Typing of Bulls

The breeding committee of the American Dairy Science Association, reporting at the Association's meeting last summer, approved the blood-typing of all bulls used in artificial breeding where semen is sold or shipped. However, it did not feel, the breed associations' requirement that their representative must be present to witness the collection of blood from each bull is necessary. Instead, the committee recommended that a licensed veterinarian, who is not a full-time employee of the organization, collect the blood samples in the presence of the manager of the breeding organization and that both sign a statement that each bull was properly identified.

The dairy health committee in their report requested that the Bureau of Animal Industry investigate the value of Brucella M vaccine, with the idea of making it available to the livestock industry of the nation as soon as it has been proved of sufficient merit to warrant its general use.—*Hoard's Dairyman, July 25, 1949.*

Intra-Arterial Drug Administration

Acute and chronic infections of the extremities are frequently difficult to control with penicillin given intramuscularly or intravenously. Even though the causative organisms are sensitive to penicillin, fibrous or bony barriers and impaired blood supply often make an optimum local concentration of penicillin unobtainable. Under these circumstances, the arterial route would appear preferable.

Intra-arterial administration of drugs is not new. A modification of this method of administration (*What's New, 137*, July-Aug., 1949), whereby the flow of venous blood is prevented by a blood pressure cuff, allows the arterial pressure to distribute the penicillin into the tissues without appreciable dilution. This technique has another useful application in simple surgery of the extremities, in that an injection of penicillin and procaine provides in a single procedure the required anesthesia, hemostasis, and chemotherapy.

Administering penicillin intra-arterially, either by injection with venous stasis or by continuous infusion, appears to provide a means of obtaining a bactericidal concentration of penicillin at the focus of infection when blood supply is poor or when impenetrable tissue barriers are present.

Gestation rations are important in promoting survival of pigs and adequate lactation for normal growth.

CLINICAL DATA

Clinical Notes

A spray combining pyrethrum and piperonyl butoxide gave three days of good protection against horseflies, and an additional two days of fair protection, in experiments at Stillwater, Okla.

Mastitis-infected cows treated with penicillin may carry enough of the drug in their milk to kill or inhibit cheese-forming bacteria, Canadian investigators have reported. Addition of penicillinase to milk used in cheese manufacture is recommended where milk is obtained from treated cows.

Lemetayer *et al. (Rec. Méd. Vét.*, Apr., 1949), in a comprehensive study, demonstrated that a single dose of tetanus toxoid in bovine animals, having no detectable antitoxin in their blood, produced an immunity equivalent to that of other species receiving two doses at thirty-day intervals.

Bovine Trichomoniasis.—Trichomoniasis is not overlooked by specialists in bovine medicine, but whether veterinarians engaged in mixed practice comprising swine, horses, poultry, beef cattle, and dogs, pay enough attention to it is a question posed by a prominent foreign language journal. *Trichomonas foetus* is not a killer but it takes a tremendous toll in prolonged periods of sterility and abortions.

BHC for Scabies.—A single treatment with a 1.0 per cent BHC suspension (0.12% *gamma* isomer), applied as a spray, was effective in ridding a cattle herd of sarcoptic mange. Bureau of Animal Industry and Kansas State Department veterinarians inspected the animals three weeks and again one month following treatment. No mites were found.

Dwarfism in Animals

A tenative hypothesis of photosensitized gene mutation aided by increased porphyrin supply to the reproductive organs is advanced by A. Staffe (*Schweiz. Arch. Tierheilk.*, 89: 443-459) following study of this condition among human beings, elephants, rhinoceroses, antelopes, and poultry in Africa.

The Bull Factor in Artificial Insemination.—A study of the conception rate from artificial insemination by breeds of bulls in Great Britain (*Vet. Rec.*, Aug. 6, 1949) showed the British Friesian was highest with 64.9 per cent and the Guernsey the lowest with 56.7 per cent. The Shorthorn was next to the highest with 63.7 per cent, and the Jersey next to the lowest with 58.7 per cent. The number of bulls involved is not given.

A low sperm density with a high percentage of unripe and abnormal sperm in a young bull indicates hypoplasia; in older bulls, the same finding denotes a degenerative process and the animal should be examined again in about a month.—*J. South Afric. Vet. M. A., Dec.*, 1948.

Johne's Disease in the U. S. A.—A map published by the Regional Animal Disease Research Laboratory, Auburn, Ala., shows that the principal centers of paratuberculosis in the United States are New Jersey, eastern Maryland, northern Virginia, Ohio, Indiana, Wisconsin, central Minnesota, and the northwest corners of California, Washington, and Oregon. South Dakota, Missouri, Kansas, Oklahoma, Utah, Idaho, Arizona, and Wyoming are exempt. Elsewhere the infection is sparsely scattered.

Prevention of Calf Scours

A schedule for the handling of newborn calves to prevent scours (the Udall method) is described by Haasjes* (*Tijdschr. Diergeneesk.*, abstr. in *Rec. Méd. Vét.*, June, 1949). The newborn calf is left with its dam for twelve hours to get its fill of colostrum and then is muzzled and fasted for twenty-four hours, at the end of which time it is given half a liter of milk cut with lime water at 37 C. (98.6 F.). The third day, the first day of feeding, it should be given its dam's milk, at the rate of 6 per cent of its body weight (with lime water), three times daily, and kept muzzled to prevent eating harmful material. The lime water is made from heated rain water.

* Dr. Chas. Haasjes, Shelby, Mich.

Problems in Handling Feeder Cattle

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THE DEMAND for veterinary services for feeder cattle is probably the smallest per head of any livestock we attend, but is compensated for by the fact that there are more cattle per farm than in dairy herds. When veterinary service is needed, it may be for a number of animals. However, the problems of the owner of feeder cattle are many and varied and should require careful consideration.

This paper, with few exceptions, is based entirely on clinical observations and actual experience in years of general practice in this section of the United States.

The cattle-feeding business is a gamble. There is a common expression that there has been as much money lost feeding cattle as ever was made. I know of no other phase of livestock production in which the farmer is confronted with so many ups and downs. However, these men are fine clients, tolerant and sympathetic to their problems. In working for these livestock men, we must remember that profit is their objective. Often, it is more profitable to market a steer, or even the entire herd, than to institute treatment; this is especially true when the cattle carry considerable flesh. Many ailments can be treated and the final profit increased.

There is, however, one class of owners of feeder cattle that are a problem, viz., the "in-and-outers." Inexperienced in both feeding and management, someone has sold them a stale lot of inferior quality cattle on which they expect to reap a large profit. In dealing with these clients, we must be firm, not omitting any details; yet we should be diplomatic and patient enough to assist them in every way possible to handle the problems as they occur. The veterinarian must discuss feeding and management intelligently. He also must be a judge of beef cattle, and must be able to inform the client the length of time to feed, so that the cattle will have enough finish for their grade. Frequently, cattle are fed too long, resulting in a loss to the owner. It would be folly to try to make prime beef out of medium-to-good cattle. Gains in feeder cattle the first fifteen months are 75 per cent heritage, and 80 per cent of the gain in the feedlot is heritage. Tonnage and quality of beef are made in the feedlot.

Experienced and successful owners of feeder cattle have sharp eyes and readily recognize any abnormality in their herds. It is here that the veterinarian must have an equally sharp eye and sound judgment, as far more dollars are involved than in the ordinary dairy herd. It is much better to overestimate than to underestimate the seriousness of the problem, especially if there is danger of the disease assuming epizoötic proportions.

Most of the feeder cattle in this section of the United States are purchased in the fall when weather conditions are changeable and adverse to shipping. One must remember they are rounded up on the range and driven a good many miles to the loading yards. After a long train ride, they are unloaded at one or more public stockyards; or even worse, they pass through one or more community sales. They have irregular feeding and watering periods. They get one or more truck rides and finally arrive in the farmer's feedlot weak and exhausted. The cattle should be placed in barns or sheds, should be well bedded and kept there approximately two weeks, as the first essential need is rest. They may be allowed to go outside for a few hours during the middle of the day, providing the sun shines and it is warm. Access to plenty of timothy or mixed hay and clean, fresh water is a "must."

The rugged animals will soon overcome the effect of shipping. Render maximum therapeutic and surgical aid with the minimum amount of handling. Fighting and rough handling frequently do as much harm as the treatment will do good. Remember, every time these cattle have been handled, they have been hurt, in branding, castration, and vaccination; consequently, they are afraid. Therefore, it is best to make a preliminary examination before the cattle are handled and excited. Various methods for handling the animals are in use but some form of a narrow chute, so the cattle cannot turn around, and stanchion are essential for easy treatment. The first few weeks after the cattle arrive in the feedlot is the farmer's most crucial period, and it is then that the veterinarian is most frequently called.

Presented before the Section on General Practice, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

Shipping Fever.—Shipping fever is one of the most common diseases and is primarily due to the Pasteurella organisms; it is a septicemia. Whether we wish to call shipping fever and hemorrhagic septicemia one and the same disease or separate diseases, the handling of the cattle and the treatment are the same. The use of antibiotics is efficacious in the handling of this problem.

The morbidity and the mortality are greater in calves than in older cattle. Careful inspection of the herd twice a day by the owner, and prompt isolation and treatment of the sick animals, will assist materially in keeping losses at a minimum.

I do not attempt to treat mildly affected animals if they are eating well, even though they do cough, have a nasal discharge, and some diarrhea. I keep a daily check to see that the general principles outlined for newly arrived feeder cattle are followed.

Alkalinize the drinking water with 10 lb. of sodium bicarbonate to each 50 gal. Feed plenty of hay, but no grain, until all symptoms of the disease have disappeared. The sick animals are treated as follows: daily administration of 200,000 units or more of penicillin sodium in 500 to 1,000 cc. of normal saline, intravenously, depending on the size of the animal. This form of fluid therapy is a stimulant to the weak animals and assists materially in recovery; also up to 1,000,000 units of procaine penicillin in oil intramuscularly, and the sulfonamide of choice. I prefer to use the combination of equal parts of sodium sulfathiazole and sodium sulfamerazine, giving ½ to ¾ gr. per pound of body weight *per os* daily, or the sulfonamide in sterile solution may be administered intraperitoneally through the right flank. My reason for using the sulfonamides orally instead of intravenously is that the sulfonamide solution is highly alkaline and may produce severe shock, especially in weak animals. The normal saline solution is always safe. I administer all the treatment, thereby eliminating all cases of mechanical pneumonia from improper drenching and frequent handling. If the owner is to administer medication, see that he does it with a balling gun, never allow drenching. These daily treatments are continued until the temperature is normal and the animal shows improvment, usually three or four days.

In cases of severe dehydration, continue some form of fluid therapy, either dextrose or sterile gelatin solution. I have little faith in the use of bacterins as a prophylactic or a curative measure. Serums have some value. I never advocate the vaccination of the entire herd and only do so on the insistence of the owner; then, I explain to him the variability of the results, for it is embarrassing to have the vaccinated cattle develop the disease later.

Infectious Keratitis.—Frequently, cattle arrive in the feedlot affected with infectious keratitis, as the result of their long journey and their exposure in shipping. Its occurrence is most common among young cattle, although all ages are susceptible.

Some may have only a mild type of the infection which will clear up in a few days; these will require no treatment. Others will have the acute type of eight days' or more duration. The animals affected with the acute type should be isolated, removed from direct sunlight, dust, and gnats, and protected from the flies. A proper ration, especially one rich in vitamin A, plus good herd hygiene is all the treatment that most affected cattle will require. However, when both eyes are affected and when there is danger of corneal rupture with total blindness, local treatment is necessary in an effort to save at least one eye.

I use a powder, consisting of urea 84 per cent, sulfanilamide 14 per cent, and sulfathiazole 2 per cent, dusted into the eyes with a bellows-type can once or twice a day. The results obtained by the use of bacterins are too variable to recommend for general use, and I believe the value of the bacterin is the effect of the foreign protein.

Blackleg and Malignant Edema.—Blackleg and malignant edema are encountered occasionally in the feedlot. Most cases occur in older animals, although the majority of feeders are vaccinated for blackleg on the range. Young calves and those in a weakened or rundown condition may not develop a lasting immunity.

Both of these diseases are due to closely related organisms that cause similar symptoms and lesions in affected animals. Frequently, a primary attack by one may be complicated by the presence of the other.

To handle these two closely related diseases, veterinary supply houses produce a combined blackleg-malignant edema bacterin which generally consists of 50 per cent of each organism. This mixed bacterin, administered in a single dose, will furnish protection against both diseases.

Unless a positive diagnosis can be made, have a laboratory confirmation before the entire herd is vaccinated.

Coccidiosis.—Coccidiosis is another disease that is occasionally found in the feedlot. Good results are reported from the use of several of the sulfonamides, preferably sulfamerazine. Sulfaquinoxaline has possi-

bilities. Copper sulfate (1%) in the drinking water is beneficial.

Malignant Catarrhal Fever.—Malignant catarrhal fever is an infectious, noncontagious, sporadic, highly fatal disease occasionally encountered in feeder cattle. All the epithelial tissues of the body are affected. It has been observed in animals ranging from 10 months old to maturity. Seldom does recovery occur. Isolate affected animals. The treatment is purely symptomatic.

Calf Diphtheria.—Calf diphtheria is a highly fatal disease involving the mouth, throat, and upper respiratory tract of young feeder cattle.

The handling of this disease with sulfamerazine gives great promise. The dose is ¾ to 1 gr. per pound of body weight daily *per os* for two or three days.

Actinomycosis. — Actinomycosis, mostly of the glandular type, is very common in feeder cattle.

Isolate all animals, especially those in which the lesion is open and discharging. Administer sodium iodide intravenously; repeat in a couple of weeks if necessary. If several animals are affected, feed iodine in salt or feed; organic iodine may be administered orally. When the lesion is well advanced, open and drain out the pus and pack with bichloride of mercury. This cauterizes the sac, produces sloughing, and leaves a healthy wound that heals rapidly. This is used as an adjunct to the iodine treatment.

Always keep in mind that the sale of the animal may be the most profitable to the owner.

Scabies or Mange.—Scabies, mange, mad itch, or barn itch are names given these conditions by the owner and represent some form of mange. It causes considerable rubbing and is annoying to the animals. It first makes its appearance at the withers as a moist patch and spreads to other parts of the body.

Confine the cattle in a close place and thoroughly spray with a solution of benzene hexachloride or, possibly better, technical chlordane solution. One application will usually suffice; however, if any symptoms are noted in ten days, repeat the treatment.

Warts.—Seed warts are successfully treated with wart vaccine, the dose being 20 to 40 cc., subcutaneously.

Ringworm.—Ringworm is handled by using a 20 per cent solution of sodium caprylate as a spray. Repeat every two or three days for five treatments. It is harmless to the eye, so have no fear in treating those cases of ringworm around the eye with this preparation.

Foot Rot.—Foot rot is another common condition seen in feeder cattle, and may be enzoötic. It is imperative that the animal be cast and proper restraint applied so the interdigital space can be carefully examined before attempting treatment. In casting these animals, I prefer the stretching method. Use a good halter to fasten the head, since they take well to a halter, whereas they fight the bull lead. Half-hitch both hind legs with a short piece of rope, then fasten the block and tackle in this rope and stretch the animal. This works very nicely for all kinds of surgery.

If a foreign body should be present, any form of treatment that does not include its removal will surely fail. From the standpoint of treatment, I like to divide foot rot into two stages: (1) where the skin of the interdigital space is swollen, hot, and painful; (2) where the interdigital phlegmon is about to rupture, or has ruptured, and becomes necrotic, often extending to the deeper-seated structures. The only treatment generally needed for cases in stage 1 is the intravenous injection of sulfonamides, either sodium sulfapyridine or sodium sulfamethazine. The dose range is 30 to 60 Gm. in 250 to 500 cc. of sterile distilled water. In stage 2, it is a different story; here, use topical medication and protective bandages. Consider the intravenous injection of the sulfonamides as an adjunct to the local treatment. Thoroughly cleanse the foot and limb to the ankle, remove all necrotic tissue possible, and pack the entire interdigital space with sodium sulfamerazine or some other suitable sulfonamide. Cover with gauze and oakum, bandage firmly, and wire the toes together to prevent spreading of the claws; cover bandage with pine tar to keep moisture out, and allow the bandage to remain until it falls off. One treatment will usually suffice. Thorough cleansing, packing, immobilization, and asepsis give the end result. In case a large number of cattle are affected, build around the water tanks a foot bath in which place a solution of lime and sulfur 1 : 15. This solution of lime and sulfur, developed by the Lewis Lye Company, is very satisfactory and has cut down the cost of treatment. I look on amputation as the last resort and find it seldom, if ever, necessary.

Make a careful inspection of the feedlot and correct the contributing factor to this problem. Frequently, you will find it around the feed bunks or watering tank where mud holes have been filled with coarse cinders, broken bricks, tile, or sharp crushed rock. You may find the feedlot frozen and very rough, or it may be wet and sloppy. Any of these conditions can produce injury to the skin in the inter-

digital space, which is almost certain to cause foot rot.

Choke.—Foreign bodies are occasionally found in the esophagus just posterior to the pharynx; this is observed mostly when cattle are pastured in stock fields.

The animal should be securely fastened. The head must be carefully fixed, and the mouth should be held open with the aid of a speculum. An assistant can force the foreign object forward into the pharynx; as the pharynx and esophagus are more dilatable in the ox than in the horse, it is rather easy to move. When the foreign object cannot be easily removed with the fingers, I use a piece of No. 9 wire about 30 in. long, with a blunt, ½-in. hook bent on one end. The hook is firmly fastened and held in the foreign object with the fingers, and an assistant pulls on the wire. In this way, greater traction is applied and the foreign object is removed with ease.

Urinary Calculi.—Urinary calculi occur frequently in feeder cattle. They may be observed in the form of a large calculus or many small calculi varying in size from small grains of sand to the size of large tapioca grains.

It is generally agreed that there are two major predisposing factors that aid in the formation of these calculi, viz., (1) lack of vitamin A in the diet due to the feeding of poor quality of roughage during the winter months; (2) a water supply inadequate in quantity, availability, and temperature; in short, anything that will cause a small intake of water.

The calculus or calculi may localize at any point in the entire urinary tract. However, 98 per cent of the cases are found in the sigmoid flexure of the penis. Little difficulty should be experienced in making a correct diagnosis.

The treatment and the technique employed will depend largely upon the flesh of the animal. If the animal is in marketable flesh, urethrotomy in the ischial region is routine procedure. The skin incision should be 4 in. or 5 in. long, depending on the flesh of the animal (the greater the thickness to the urethra the longer the incision in order to provide good drainage). The incision should be carried through the muscles to, and through, the urethra. The incision in the urethra should be at least 2 in. long.

This operation will take care of better than 90 per cent of the cases; it provides an excellent exit for the urine. The concretions which lie at a lower point are allowed to remain, and those above should be flushed out. As soon as the symptoms of uremia disappear and the swelling along the sheath has subsided, the animal should be marketed. When the animal is thin and not in marketable condition, amputation of the penis is the logical procedure. Make an incision about 4 in. long from the ischial arch downward and forward to the penis. Using a blunt instrument and the fingers, dissect around the penis and amputate at the foremost point of the incision. Take an inverted V-shaped section from the ventral surface of the stump through the urethra; suture the edges of the urethra to the skin, thus preventing adhesions and a stricture, and affording a permanent exit for the urine. Much can be done to prevent urinary calculi by supplying plenty of clean, fresh water and increasing water consumption by providing good roughage and feeding bonemeal with molasses feeds.

Digestive Disturbances.—The digestive disturbances are most effectively handled when the treatment is based on etiology.

The deranged function of the forestomachs may be classified as follows: atony, due to spoiled feed or to the improper feeding of good feed; and tympany, either so-called dry bloat or frothy bloat, due to the ingestion of abnormally large quantities of green feed. Atony is handled by administering ½ to 1 gal. of milk of magnesia and rumen stimulants by way of the stomach tube. Failing to get results, I try ¼ to ½ lb. of yeast dissolved in 1 pt. to 1 qt. of warm water, to which 1 to 2 qt. of corn syrup are added, and give it once or twice daily. I have not given a dose of Epsom salt for over thirty years, as it produces too much dehydration.

Tympany, either primary or secondary, has always presented a difficult problem. At present, I am using tympanol (a highly polymerized methyl silicone) either injected directly into the rumen or diluted with water and given as a drench. The results obtained on a limited number of cases so far treated are most gratifying. This may revolutionize most of our previous procedure and eliminate tapping and rumenotomy in many instances. Prior to use of this treatment, antiferments and rumen stimulants of various kinds were employed. Early marketing may be advisable if the animal has gorged on grain or soybeans. Seldom do we have traumatic gastritis. Vitamin A in ¼ to ½ million units daily is recommended for chronic bloat.

Like many other conditions, I know of no place where preventive measures can be better applied than for indigestion in feeder cattle; judicious feeding, salt before cattle at all times, and plenty of clean, fresh water. In warm weather, the water tank should be cleaned once a week. Great care

must be exercised in getting cattle on feed. When they have fully recovered from the effect of shipping, they should be started gradually on grain. A safe plan is to start feeding 1 lb. of grain per head at each feeding. Increase the allowance at the rate of 1 lb. or less per head daily, care being taken not to increase the amount unless all the cattle are eager for their feed. When they are approaching a full feed, the increase should be much more gradual, probably not over 1 lb. every third day. The same principle involved in bringing cattle on feed must be applied to the supplement, whether it be cottonseed meal, linseed meal, or soybean meal.

Anasarca.—Anasarca is a condition of feedlot cattle characterized by swellings posterior to the front legs. It is brought about by feeding a ration deficient in carotene. Complete recovery can be expected in about one week by the administration of ¼ to ½ million units of vitamin A daily.

SUMMARY

1) Cattle are fed for profit. Therefore, exercise good judgment when dealing with all problems.

2) Never underestimate the seriousness of the malady.

3) Place arriving cattle in barns or sheds well bedded, until all danger of shipping illness is over.

4) Have some form of a chute and stanchion for ease of handling.

5) Avoid excessive handling and medication.

6) Exercise great care in getting cattle on full feed.

Since swine blood samples often hemolyze when shipped in the summer, it is best to separate the cells and serum before shipping to the laboratory. This can be done by allowing the samples to stand at room temperature for an hour or two and decanting the serum. The addition of a few milligrams of a sulfonamide will do much to prevent hemolysis from bacterial contamination.—*H. S. Cameron, D.V.M., Calif.*

In a survey of 2,788 cultures from 32 animal species (not including man and fowl), 55 Salmonella types were isolated. *Salmonella choleraesuis* appeared most frequently, but *S. typhimurium* was most widely distributed among the animal species.

Of the total *choleraesuis* cultures (992 from 865 outbreaks), there were 935 cultures from swine in 810 outbreaks.—*Bruner and Moran in Cornell Vet., Jan., 1949.*

Deaths of Calves Following Dipping in Chlordane

Reports of toxicity of chlordane to cattle are scanty, and it is generally recognized to be a safe insecticide for use with large animals. Most of the reports of toxicity are the results of experimental work done by the U.S. Department of Agriculture and recorded in the Department's 1948 report. Welch[2] also records toxicity.

The 1948 report states that four sprayings with 2 per cent chlordane solution at fourteen-day intervals caused groaning, grinding of teeth, blindness, and violent struggling in acute cases, and nervous symptoms such as locomotor ataxia, circling, staggering, convulsions, and blindness in subacute cases. Symptoms were also reported in sheep following frequent dipping.

The present case is of interest in that chlordane appears to have been toxic, under adverse circumstances, to calves of the youngest age group only.

On this farm, animals of all ages have been dipped both before and since in solutions of the same strength, but only on the occasion reported herein have toxic symptoms developed in one age group of animals. Thus, the case demonstrates not only that "safe" strength can be toxic under certain conditions, but also that marked difference in susceptibility between animals of different ages is possible.

TABLE I

	Percentage free chlorine	
	Found	Theoretic
1) From top of dip after settling	0.0020	0.0009
2) From dip after stirring	0.0007	
3) Dip concentrate in drum (top)	50	48
4) Dip concentrate in drum (sediment)	47	

In a tank of approximately 2,500-gal. capacity, a 0.25 per cent chlordane dip had been used for the last twelve months for cattle of all ages. It had been drained on March 17 and refilled with 2,500 gal. of water and 8½ gal. of dip fluid. The chlordane concentrate had apparently been added in the usual manner. On March 29, while stirring the solution, the paddle broke and the stirring was not completed. However, approximately 80 calves went through the dip previous to the group which later became affected. On this date, the herd of cows and calves were driven into the pen at 9:30 a.m. Calves over 3 months old were segregated, and some were branded and

castrated. These were dipped first, beginning at 1:30 p.m. They were followed by the group of younger calves (under 3½ months), and then by the cows. The day was very hot and it is likely that the animals were thirsty and dehydrated when they entered the dip as no water was available in the pen. The youngest calves were probably dipped about 2:00 to 2:30 p.m., and the first sick one was noted at 6 p.m. It was not until the next morning that symptoms really developed. At 6 a.m., 1 animal was affected and at 10 a.m., when the herd was inspected, several were showing symptoms. About 20 animals were affected. It is not clear if any of the calves drank from the dip.

Nervous symptoms were predominant. Most of the animals were blind or in a coma. They walked either in a straight line, bumping into trees and posts, or in a circle with a mechanical gait, apparently completely oblivious of their surroundings. Normally excitable calves allowed themselves to be handled and drenched without resistance.

Others were highly excitable, jumping and leaping in an incoördinated manner. There were clonic twitchings and spasms, and general hyperexcitability. The temperature of one calf (standing in the sun all day) was 105 F.

Autopsy showed no macroscopic changes. The brain was not examined.

The losses were confined to calves under 3½ months old, of which 10 out of 73 died. Approximately 10 others manifested symptoms but recovered. Some of those affected for a long period with dullness and coma survived, whereas, those slightly excitable often died within an hour of the first symptoms observed. Those showing acute symptoms were not necessarily affected most quickly after dipping.

One bull which broke into the dipping tank and apparently spent several hours in the fluid died after a ten-day illness. Fissuring of the skin, fever, and nervous symptoms were present. Death was caused by toxemia from the severe dermatitis.

Eight turkeys whose heads had been painted with an oily mixture containing 25 per cent chlordane died within a few hours with nervous symptoms.

Analyses of the contents of the tank were made at the time the deaths were investigated. Results are shown in table 1.

The analyst reports that these figures do not vary significantly from those theoretically expected, and they certainly do not fall outside the range generally regarded as safe.

The dip was of the recommended strength and was used previously at greater concentrations and has been used since at the same concentration. The symptoms appear to have been typical of chlordane poisoning in every way, and it is reasonable to assume that it was the toxic agent. Calves of the most susceptible age group, only, were affected.

It appears that the deaths resulted from the error of dipping calves after exposure to a hot sun for three hours. This is a deplorable dipping practice and could cause trouble with any type of dip; under these conditions chlordane at a strength otherwise safe has proved dangerous.

SUMMARY

Under adverse dipping conditions, 10 calves died after being dipped in 0.25 per cent chlordane emulsion solution. Older animals dipped at the same time were not affected.—*R. M. Arnold, M.R.C.V.S., Veterinary Investigation Officer, Jamaica, British West Indies.*

References

[1]Rept. U.S. Bureau of Animal Industry, (1948): 58.

[2]Welch, H.: Tests of the Toxicity to Sheep and Cattle of Certain of the Newer Insecticides. J. Econ. Entom., *41*, (1948): 36.

Dramamine for Motion Sickness

In animals, especially horses, motion sickness, such as sea sickness and car sickness that upset nervous equilibrium, manifests itself by tetanus in variable degrees of convulsive severity. Practitioners often are consulted about the prevention and treatment of car sickness in dogs, particularly young dogs. Veterinarians who have not had success with their usual formulas for preventing this trouble may be interested in some of the newer drug combinations designed to prevent and treat motion sickness in human patients. The newest drug, and reportedly the best yet developed for this purpose (*Sci. News Letter*, Feb. 26, 1949), is a proprietary compound called dramamine (betadimethylaminoethyl benzohydral ether 8-chlorotheophylinate; Searle).

During the war, several different drugs and mixtures were tested, with varying degrees of success yet, in general, with slightly better results than were afforded by any of the prewar remedies. One of these compounds, said to be reasonably effective (*Cur. Med. Dig.*, March, 1949), contained atropine, phenobarbital, and benzedrine sulfate. Another comprised hyoscine, hydrobromide, amytal, and atropine sulfate. The U. S. Navy also used hyoscine alone and found it about as effective as any of the compounds.

Effects of Management and Therapy on Staphylococcic Mammary Infections

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THIS PAPER presents a summary of data, relative to staphylococcic mammary infections, gathered from 1945 through 1948 in a herd from which *Streptococcus agalactiae* had been practically eliminated. Early in 1947, mammary infections with organisms of the coliform group appeared in epizootic proportion and were responsible for cases of severe mastitis. Therefore, during the last two years of this study, simultaneous investigations were conducted on both staphylococcic and coliform infections. Certain data relative to the coliform infections have been published.[1,2]

METHODS

Herd Management.—The herd was owned by one of the California state hospitals for mental patients. It was composed of both grade and purebred Holstein-Friesian cows. About one-fourth of the herd was milked three times a day, the remainder twice daily. The cows were milked by machines, operated by hired employees, and hand-stripped by selected inmates of the institution. Fresh and hospitalized cows were hand-milked.

The cows were kept in groups or strings of not more than 30 animals each. The group to which a cow was to be assigned was determined by current knowledge of her udder flora.

The milk barn was of modern, wood and concrete construction. There were four rows of 30 metal stanchions each. Each string of cows occupied a row of stanchions, and each cow within a string was assigned to a specific stanchion position for milking. The cows were milked in a sequence designed to retard, in so far as possible, the spread of mammary infections by the milking process.

Between milking periods, each string occupied a separate, paved corral having an adjoining shelter which was thickly bedded with straw or wood shavings. In addition, the dry cows were divided into infected and clean groups and corralled separately.

Sanitary practices consisted of (1) thorough cleaning and heat-sterilization of the milking machines between milking periods; (2) washing the udders prior to milking with tepid water under pressure; (3) disinfection (during the last half of the program only) of teats with chlorine solution after each milking; (4) frequent removal of manure from corrals and replacement of bedding in shelter sheds; and (5) washing of the milk barn with water under pressure after each milking and spraying of the mangers, floors, and walls three times a week with a 1:400 dilution of a 10 per cent stock solution of one of the quaternary ammonium compounds. An adequate supply of inmate labor made it possible to maintain the dairy in an unusually sanitary condition.

Bacteriologic Procedures.—About 15 cc. of milk was drawn into sterile flat-bottomed, screw-capped vials containing 1.0 cc. of a 0.33 per cent aqueous bromcresol purple solution. The samples were incubated at 37 C. for sixteen to twenty hours and then the Hotis test interpretations were made. During the latter half of the study, the milk samples were reincubated for another day and a second Hotis reading was made in order to record the occurrence of a characteristic digestion of the milk, produced by some strains of pathogenic staphylococci.[3] When dry cows were sampled, the Hotis test was eliminated from the series of bacteriologic procedures.

Smears were prepared from all samples after sixteen to twenty hours of incubation and stained for microscopic study. A record was made of the types of bacteria, and an approximation of the number of leucocytes, present.

During the first two years of the investigation, the milk was cultured by plating 1 cc. of a 1:10 saline dilution of the unincubated sample in veal infusion agar containing 5 to 7 per cent of cow blood. However, after the second year, a change was made in the method of culturing the milk. Thereafter, a loopful (2 mm.) of sample was taken after sixteen to twenty hours of incubation and this quantity was streaked on half of a cow blood-agar plate. The change to the latter method was made because it detected more infected quarters.[3]

After twenty to twenty-four hours of incubation, inoculated plates were carefully observed by transillumination. Colonies of

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staphylococci that produced changes in the medium characteristic of *alpha* and *beta* toxins were classified as pathogenic staphylococci (*Staphylococcus pyogenes*).* Pure cultures were established by transferring single colonies to serum-broth, and such cultures were tested for ability to coagulate rabbit plasma.

Frequency of Sampling.—The herd was divided, for segregation and milking purposes, into seven strings of lactating cows, two groups of dry cows, and a mixed group of fresh and hospitalized cows. Composite milk samples were drawn from individuals when they were being sampled routinely, but quarter samples were drawn when verification of infection was desired or when animals were being treated. Fresh cows were sampled within a week after calving. This was important in order to ascertain the status of each udder at the beginning of each new lactation, as a basis for assigning the animal to the proper milking string. An effort was made to sample each lactating cow at least once every six weeks. Sampling was not always as frequent as this among the cows previously designated as infected, for it was considered more important to have frequent tests on the cows in the non-infected strings, in order to detect new infections within the group as early as possible. Each animal was sampled several times in the drying-off period and while dry. In general, it can be stated that the mammary secretion of every cow in the herd was subjected to a bacteriologic examination one or more times in every quarter of the year.

Criterion of Infection.—A cow was classified as infected with *Staph. pyogenes* only when presence of the organism in the milk was confirmed upon resampling. The usual experience was to find this organism for the first time in a composite milk sample taken on routine test of the udder; whereupon, individual quarter samples were drawn the following week. If *Staph. pyogenes* was present in one or more quarters on resampling, the cow was then classified as infected and immediately removed to an infected group. However, if the samples taken for verification did not reveal *Staph. pyogenes*, the animal remained in her original position but was sampled again one or more times in the weeks immediately following. Reappearance of the pathogen in any of these repeat samplings was interpreted as indication of a mammary infection, and the cow was removed from the string.

Therapy.—Attempts were made to remove *Staph. pyogenes* from infected quarters by specific therapy. For this purpose, penicillin was the principal agent used. However, streptomycin, sulfamethazine, and benzoquinone were among other agents employed. Some of the results obtained with these agents have been published.[2,4,5]

In this paper, the portion on therapy will be limited to a presentation of the results obtained with penicillin. In the first and second years of the investigation, either the amorphous calcium or amorphous sodium penicillin was employed; whereas, in the third and fourth years, either the sodium or potassium crystalline penicillin was used.

TABLE 1—Classification of Cows During Each Year of Program

CATEGORY AND SOURCE		1st Year	2nd Year	3rd Year	4th Year
		n 110	116	88	88
COWS SHOWING INFECTION SOME TIME DURING YEAR		n 485	427	325	272
SOURCE	INFECTION PERSISTED FROM PREVIOUS YEAR		63	44	46
	PREVIOUSLY CURED, BUT REINFECTED		14	13	6
	NEW INFECTIONS IN 2nd LACTATION COWS+OVER		50	20	26
	NEW INFECTIONS IN 1st LACTATION COWS		7	2	5
COWS NOT SHOWING INFECTION		n 117 n 515	153 673	182 675	219 728
SOURCE	PERSISTED CLEAN FROM PREVIOUS YEAR		72	95	127
	PREVIOUSLY INFECTED BUT RECOVERED		27	29	21
	FIRST LACTATION COWS		54	58	71
TOTAL INDIVIDUAL COWS (428)		227	247	270	302

The vehicle for the penicillin was principally sterile distilled water, usually 50 cc. for each infusion. However, in a few cases, either 50 cc. or 100 cc. of 5, 10, or 25 per cent w/v sodium sulfamethazine was used as a vehicle for the penicillin. In addition, sterile U.S.P. petrolatum and water-in-oil emulsions were tried as vehicles.

The term "treatment," as used in this paper, refers to one or more infusions making up a particular pattern of penicillin administration. The number of infusions included in a treatment varied from one to ten, and the time interval between infusions ranged from eight to forty-eight hours. The amount of penicillin given per infusion ranged from 20,000 to 200,000 units. The total penicillin administered to a quarter in a treatment varied from 100,000 to 1,600,000 units.

The program of treatment remained flexible throughout the four years and, for the most part, the specific patterns of penicillin administration employed evolved from previous experiences.

Criterion for Cure.—A quarter was classified as cured when it remained free of *Staph. pyogenes* for a three-month period following treatment. Among cows treated while dry, this period began with the onset of lactation and not on the date of the last infusion of penicillin. Reappearance of the organism

* The names *Staphylococcus pyogenes* var. *aureus* or *albus* are not used in this paper because a critical study of the chromogenesis of the cultures was not made.

in a treated quarter after the three-month period was regarded as a new or reinfection. In some instances, a cow classified as infected with *Staph. pyogenes* later ceased to shed the organism without being treated. Such a case is called a spontaneous cure.

TABLE 2—Summary of Penicillin Treatments: A Comparison of Response to Treatment of Staphylococcus Pyogenes Infection in Lactating and Dry Quarters

TREATMENT		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	TOTAL ALL TREATMENTS
WHILE LACTATING	NUMBER QUARTERS CURED / TOTAL QUARTERS TREATED	34/125	9/43	6/28	0/6	0/5	0/3	1/3	1/4	1/4	54/276
	PERCENTAGE CURED	27.6	14.5	26.5	0.0	0.0	0.0	14.5	25.0	50.0	20.3
WHILE DRY	NO. QTRS. CURED / TOTAL QTRS. TREATED	125/184	25/60	10/28	2/19	2/14	1/9	1/6	1/4	–	169/320
	PERCENTAGE CURED	66.8	41.6	99.3	10.5	35.7	11.1	20.0	100.0		52.8
CUMULATIVE RESULTS	NO. QTRS. CURED	157	191	212	214	219	220	222	224	225	225
	PERCENTAGE CURED	51.1	62.2	68.7	69.6	71.2	71.6	72.1	72.8	73.1	73.1

DATA AND RESULTS

The data in this analysis involve 17,367 samples collected over a period of four years. *Staph. pyogenes* was found in 2,493 (14.3%) of the samples. Evidence of irritation of the mammary gland was not conspicuous, for only 355 (14.2%) of the samples containing *Staph. pyogenes* showed an abnormal leucocyte count. On a cow basis, an abnormal leucocyte count was observed in the milk on one or more occasions from 44.5 per cent of the infected cows in the first year and in 23.6, 52.3, and 42.1 per cent of the infected cows in the second, third, and fourth year, respectively.

Infection Statistics.—A summary of the distribution of the cows into several categories for each of the four years covered by the investigation is presented in table 1. The total cows in the herd each year includes every animal present from one to twelve months of the calendar year. On this basis, the herd comprised 227 cows in the first year and increased to 302 by the fourth year, totaling 423 individual cows for the entire four years. For purposes of this analysis, a cow was classified as infected for an entire year if she showed infection at any time during the year. According to this criterion, the total incidence of infection in the first year was 48.5 per cent, and this declined to 42.7, 32.5, and 27.2 per cent in the succeeding three years. The number of cows appearing as infected in one year, but classified in the succeeding year as recovered, was 41 from the first year, 42 from the second year, and 27 from the third year; and, of these cows, 14, 13, and 6 became reinfected in the second, third, and fourth year, respectively. The total cows remaining clean for a full calendar year, after having been previously infected, was 77 and, of this number, 57 cows recovered following therapy; whereas, 20 cows recovered spontaneously.

Therapy.—In all, 307 individual quarter-infections on 133 cows, including 31 reinfections, were treated with penicillin. Failure to cure on first treatment was followed by retreatment as long as the infection persisted and the cow remained in the herd. While, initially, a quarter was treated either as lactating or dry, a retreatment did not necessarily fall in the same stage of mammary activity. A summary of all treatments with penicillin, totaling 595, is presented in table 2. On first treatment of *Staph. pyogenes* infection with penicillin, 123 quarters were lactating and 184 were dry. The infection disappeared from 27.6 per cent of the infected lactating quarters; whereas, 66.8 per cent of the dry quarters responded. This relationship between the effectiveness of penicillin against *Staph. pyogenes* in lactating *vs.* dry quarters remained essentially the same for the total treatments given, *i.e.*, 20.3 per cent of treatments administered to lactating quarters, and 52.8 per cent of treatments given to dry quarters, effected cures.

TABLE 3—Results Obtained with Some Patterns of Penicillin Administration in First Treatments of Dry Quarters Infected with Staphylococcus Pyogenes

TOTAL UNITS PENICILLIN	NUMBER UNITS PER INFUSION	NUMBER OF INFUSIONS GIVEN	INTERVAL IN HOURS BETWEEN INFUSIONS	NUMBER QUARTERS TREATED	% CURED
100,000	100,000	1		31	58.0
150,000	50,000	3	24	13	69.1
200,000	50,000	4	24	28	71.5
200,000*	100,000	2	48	60	70.0
300,000	100,000	3	48	18	72.2
400,000	100,000	4	24	13	53.8

* Of these quarters, 35 received the penicillin in 50 cc. of U.S.P. petrolatum and 71.5 per cent of them responded.

The cumulative response to all treatments was 51.1 per cent cures following first treatment, 62.2 per cent cures following second treatment, and 68.7 per cent cures following third treatment. Further progress among quarters receiving fourth to ninth treatments was limited to an additional 4.4 per cent cures, bringing the total cures among 307 infected quarters to 73.1 per cent. Thus, nearly 30 per cent of the *Staph. pyogenes* infections failed to respond to penicillin as administered.

The level of cures obtained in lactating quarters was not affected by increasing the total units of penicillin administered. For example, 36 quarters received a total of 100,000 units, 33 quarters received a total of 200,000 units, and 20 quarters received a total of 400,000 units of penicillin; the percentage of cures was 25.0, 24.2, and 20.0, respectively. The limited response of *Staph. pyogenes* infections in lactating quarters, as compared with treatment of dry quarters

with penicillin, practically led to dispensing with treatment during lactation in the last two years of the program.

Results obtained with some patterns of penicillin administration in first treatments given during the dry period are shown in table 3. The data included in the table are limited to patterns of administration employed on more than 12 quarters. The total quantity of penicillin used to treat a quarter ranged from 100,000 to 400,000 units, and it was administered in one to four equal doses at 24- or 48-hour intervals. The results indicate that little advantage was gained from increasing beyond 200,000 units the total penicillin administered per quarter. Comparable results were obtained with 200,000 units when given either as two infusions of 100,000 units each at 48-hour intervals, or 4 infusions of 50,000 units each at 24-hour intervals.

Several vehicles for the penicillin were used, as indicated under methods. The number of quarters treated with each type of vehicle was not large enough to justify comparison except between sterile distilled water and petrolatum U.S.P.* Among dry quarters receiving a total of 200,000 units of penicillin given in two infusions of 100,000 units each, forty-eight hours apart, 25 quarters received the penicillin in 50 cc. of sterile distilled water; whereas, 35 quarters received the penicillin in 50 cc. of petrolatum; 68.0 per cent of the former, and 71.5 per cent of the latter, quarters became free of *Staph. pyogenes*.

Progress Study.—In order to evaluate gains made in the control of *Staph. pyogenes* infections, and to analyze for source of improvement, the status of the herd was surveyed in the terminal quarter of each year. The data in tables 1 to 3 differ from the data presented in figures 1 to 5, since the former represent surveys extending throughout each entire year; whereas, the latter were tabulated from cross-sectional surveys limited to a portion of each year. In addition, in the terminal surveys, first lactation animals in the herd less than one month were tabulated, provided they had been tested. For these reasons, the number and percentage of cows within specific categories in the two sets of data cannot be compared.

In these terminal surveys, it was found that the incidence of infection with *Staph. pyogenes* had been reduced to 44.3 per cent of the herd after one year of control and to 27.5, 23.8, and 20.3 per cent after successive additional years (fig. 1).

Concurrently, the size of the herd increased from 226 cows at the end of the first year to 229, 252, and 270 in following years. First lactation animals numbered 58 (25.7% of the herd) at the end of the first year, and 97 (35.9%) at the end of the fourth year. At the same time, number and proportion of old cows remaining in the herd also increased. Whereas, after one year of control, only 21 cows (9.3% of the herd) were in the fifth, or over, lactation, this number increased progressively to 39 (17.0%), 53 (21.0%), and 61 (22.6%) in succeeding surveys. This marked increase in proportion of old cows was sufficient to effect an increase in average lactation age of the herd from 3.16 at the end of the first year of control to 3.38 at the end of the fourth year.

Lowest level of incidence was achieved in first lactation animals (fig. 2), where the percentage infected was 22.4 after one year of control, but only 3.1 after four years of control. Actual percentage reduction of infection in each age group, however, showed little relationship to age, the differences in percentage of infection between the first and fourth surveys being 19.3, 24.9, 27.1, 15.8, and 56.5 for the first to fifth lactation groups, respectively, and 10 per cent for the pooled group of sixth, and over, lactation cows. Dividing this data into first to third lactation groups, as opposed to fourth and over, would reveal that most of the progress in reducing incidence of infection with

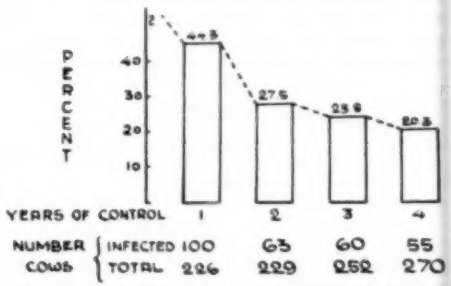


Fig. 1—Percentage incidence of infection with Staphylococcus Pyogenes after one to four years of control efforts.

Staph. pyogenes was made in the younger age group. Whereas, at the end of one year of control, the first to third group comprised 71.2 per cent of the animals in the herd and 61.0 per cent of the infected animals, after four years of control, this younger group contained 65.9 per cent of the herd, but only 36.4 per cent of the infected animals.

In analyzing for source of improvement, it is evident that the following rates of change may have affected year-to-year changes in percentage infection in the herd:

* Penicillin in petrolatum supplied by Cutter Laboratories, Berkeley, Calif.

1) The rates at which both clean and infected animals disappear from the herd between one survey and the next (culling and deaths).

2) The rate at which infected animals of one year appear in the clean group of the next (therapeutic and spontaneous cures).

3) The rate at which clean animals of one year appear in the infected group of the next (new infections).

4) The rate at which new animals are introduced, and the category into which they fall with respect to infection (herd additions).

5) The relation between factors one to four and their corresponding rates prior to functioning of the program (chronologic change).

Accordingly, the data of each terminal survey were divided to involve positive *vs.* negative animals and the above changes determined from the corresponding succeeding years' surveys.

1) Disappearances from the Herd.—In the second, third, and fourth years, respectively, 21.0, 22.2, and 33.3 per cent of animals infected with *Staph. pyogenes* in corresponding previous terminal surveys disappeared from the herd (fig. 3). The total number was 55, and the average percentage rate of disappearance of infected animals was 24.7. At the same time, 100 clean animals (average percentage rate 20.7) were culled, representing 27.7, 15.0, and 20.8 per cent of animals clean in the first, second, and third years' surveys. The data were grouped to determine possible relationship of culling rates to lactation age (fig. 4). Disappearance of cows from the herd was related to age only in the oldest age group, where rates were highest in both clean and infected animals. Rates of disappearance of cows from the herd seemed to have little or no relation to infection with *Staph. pyogenes*.

2) Cures.—The rate at which infected animals of one year appeared in the clean group of the next was largely the result of therapy. Among infected animals present in the first, second, and third surveys (fig. 3), 39.0, 27.0, and 20.0 per cent, respectively, appeared clean in the corresponding succeeding years' survey, an average of 30.5 per cent. Recoveries were highest in the second lactation group, and were about equal in all other groups except the oldest, where only 1 of 20 animals previously infected was found to be clean (fig. 5).

3) New Infections.—The rate at which clean animals of one year appeared in the infected group of the following year represents the net loss in control due to new infections, or net rate of spread. New infections appeared at the rates of 13.6, 15.6, and 13.1 per cent, respectively (fig. 3), in the second, third, and fourth years, averaging 14.0 per cent. When these data were analyzed for relationship to lactation age, it was found that there was but slight bias on age (fig. 5), the greatest departures from average being in the first lactation animals (10.0% infection) and the sixth, and over, lactation (20.0%).

4) Herd Additions.—Herd additions were

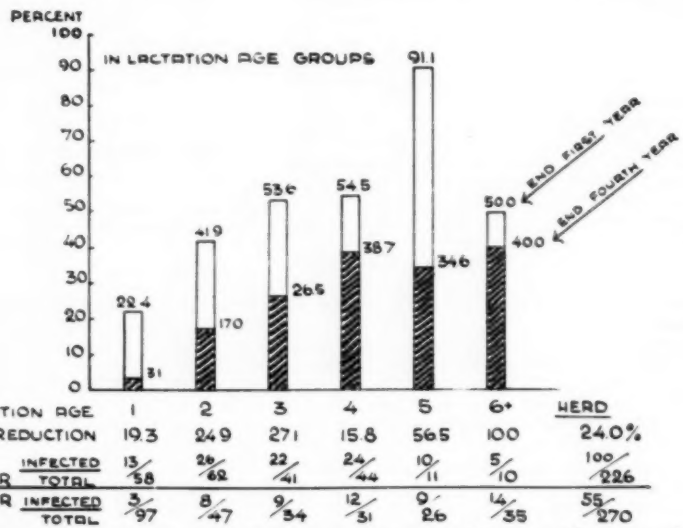


Fig. 2—Percentage incidence of infection with Staphylococcus Pyogenes after one and four years of control efforts.

limited to home-grown, first lactation animals. Such new additions numbered 59 in the second survey, of which 6 were positive; 62 in the third, of which 2 were positive; and 78 in the fourth, of which 2 were positive.

5) Chronologic Change.—Because comparable data were not available prior to the time covered in the present analysis, we cannot definitely state basic preprogram figures for purposes of comparison. However, early data can be used to indicate the prior status of the herd, and this will be introduced with discussion.

DISCUSSION

Prior to placing emphasis on *Staphylococcus pyogenes* control in this herd, data were not sufficiently complete to determine the actual herd incidence of infection with this pathogen. However, a survey made in the third quarter of the first year of control revealed that the incidence of infection was, at that time, 52.3 per cent in the herd as a whole and 25.7 per cent in first lactation animals. The average age of the herd in terms of lactations was 2.95.* From these facts, and the observations that throughout the entire control program there was a gradual increase in average age of the herd and a gradual decrease in level of incidence of infection, it can be deduced that the following situations probably prevailed at the start of the program:

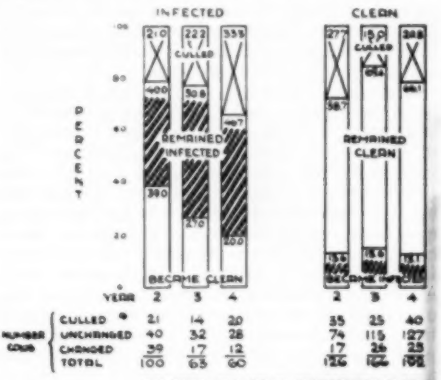
1) The incidence of infection with *Staph. pyogenes* was greater than 52.3 per cent.

2) The incidence of infection in first lactation animals was over 25.7 per cent.

3) The average lactation age of the herd was less than 2.95.

4) The rate of spread was considerably above 26 per cent annually, since an average exposure of two lactations achieved over 52 per cent infections, and, at the midpoint of the first lactation, 26 per cent of the heifers were infected.

Incidence of Infection.—During the control program, the herd incidence of infection with *Staph. pyogenes* fell from about 52.3 per cent to 44.3 per cent at the end of the first year, and to 27.5, 23.8, and 20.3 per cent in the second, third, and fourth year, respectively. These data show that excellent progress was made in reducing infection during the first and second years of the program; whereas, after the second year, progress was not striking and results suggest that a state of equilibrium was being approached. Examination of the data in figure 3 reveals that only in the second year of control were more cows cured than became infected (39 cures *vs.* 17 new infections); whereas, in the third and fourth years, more cows became infected than were cured. On a percentage basis, in all years of the program, and in all age groups except the sixth, and over, lactation (fig. 5), there was a favorable differential between the rate of new infections and the rate of cures. However, since the rate of cures year by year was operative among a declining number of infected cows, and the rate of new infections was operative among a rapidly increasing number of clean cows (mostly from clean herd additions), the differential between the two percentage rates was not great enough in the last two years to produce a net gain in number of cows cured over number of cows becoming infected. Thus, equilibrium between number of cows cured and number of new infections had been reached sometime in the third year and the further progress in lowering incidence of infection was made possible by factors other than therapy.



* Includes all cows disappearing from herd either by removal or death.

Fig. 3—Year-to-year changes in status among cows classified in preceding years' survey.

As long as therapy cannot be 100 per cent effective, culling of infected cows and the introduction of clean cows must be relied upon to reduce the incidence of infection beyond the point of equilibrium between rate of cure and rate of new infection. If, for example, the rate at which infected cows become cured is 20 per cent, and the rate at which clean animals become infected is 13 per cent, as in the last year of our program, then equilibrium, in the absence of culling or herd additions, will be reached at an infection level of 39.4 per cent.*

* Meaning that, on an average, 95 per cent of second lactation had been completed.

* Rate of cures × proportion of infected cows = rate of spread × proportion clean cows: $20\ X = 13\ (1-X)$; $X = 39.4$ per cent.

Although certain observations deter us from concluding that *Staph. pyogenes* mammary infections cannot be eliminated from a herd, it is quite clear that further significant reduction in incidence of infection with *Staph. pyogenes* in this herd can be realized only through (1) increasing the tempo of culling of infected cows resistant to therapy or the rate of introduction of clean animals, (2) improving the effectiveness of therapy, and (3) introducing additional managerial features in an attempt to lower the rate of occurrence of new infections.

The data gathered in this herd suggest both analogies and differences between mammary infections with *Staph. pyogenes* and with *Streptococcus agalactiae*. The nature of the latter infection is such that it responds readily to treatment with penicillin administered either to lactating or dry quarters; whereas, with the former, penicillin is relatively ineffective when administered to infected lactating quarters and, although a much higher rate of cures was obtained when dry quarters were treated, the level of response was below that experienced when treating streptococcic infections. With *Str. agalactiae*, segregation and sanitary milking practices were more effective in preventing the occurrence of new infections than they were in the program for control of *Staph. pyogenes*. In this herd, streptococcic infection was reduced to a low level in two years and completely eradicated in a succeeding year; whereas, a similar program of testing, segregation, and therapy, carried on for four years, resulted in a reduction of staphylococcic infection from about 50 per cent to 20 per cent. An analogy between the two diseases is found in the incidence of infection as related to lactation age. When consideration is limited, as in this investigation, to toxicogenic, coagulase-positive staphylococci, it is found that the incidence of infection increases with age up to the fifth lactation (fig. 2). A similar incremental pattern of incidence has been observed in herds infected with *Str. agalactiae;* this suggests the possibility of a similar manner of spread of the two infections, that is, principally by way of the milking act.

Evidence of the importance of the milking process in the spread of *Staph. pyogenes* mammary infection is to be found in the data accumulated on incidence of infection among first lactation animals. In this age group, therapy could not play a significant part in lowering the incidence of infection. The data show that the incidence of infection with *Staph. pyogenes* was about 25.7 per cent in first lactation animals early in the program; whereas, at the end of the fourth year the incidence of infection was 3.1 per cent among the first lactation animals in the herd at that time. The long-term importance of such protection is best appreciated when one reflects that the mere protection of heifers each year provides second lactation animals of low incidence of infection for each succeeding year. This reduction was principally the result of protection of the noninfected herd additions from exposure, which prior to the program was unlimited, and points to the value of segregation of clean and infected animals. In fact, the protection of clean animals of all age groups from exposure to infected cows, both during milking and while in corrals, can be credited with the major portion of the progress made in the herd. Success in this direction introduces the question of bovine mammary gland specificity of staphylococcic strains encountered.

Herd Management.—Examination of herd management for situations which could have

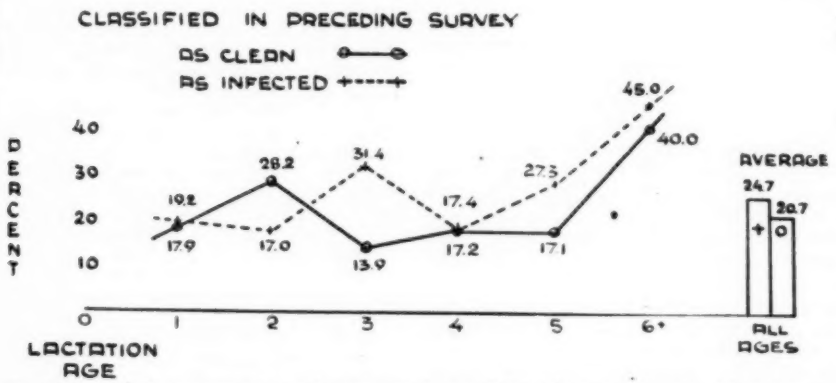


Fig. 4—Rate of disappearance in ensuing year of clean and Staphylococcus Pyogenes infected cows in relation to laction age (4-years' data).

contributed to low grade spread among clean animals revealed a weak point in the program. No control could be exercised over the personal habits of the milkers or inmate strippers. The same personnel milked both the clean and infected groups. The elapsed time between milking infected cows at the end of one milking period, and the milking of clean cows at the beginning of the next, was about six hours in the case of those milked three times daily and about nine hours for the remainder of the herd. Hands and clothing of milkers and strippers become contaminated with staphylococci through handling infected animals, and there is a possibility that viable organisms may have been carried, by this means, to the clean cows at succeeding milking periods.

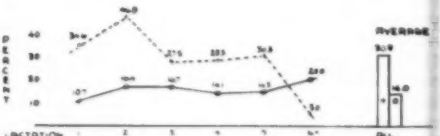
Infection with *Staph. pyogenes*, in this herd, was not attended in any great measure by serious irritation to the udder. However, individual cows did manifest clinical mastitis. An acute gangrenous mastitis occurred in one cow, and a fulminating nongangrenous mastitis developed in another. These were the only cases in which *Staph. pyogenes* mammary infection contributed to immediate removal of cows from the herd. On the other hand, swelling and/or a visibly abnormal milk were recorded in association with 3.6 per cent of 2,493 positive milk samples, and an increase in leucocytes above normal range was recorded in 14.3 per cent of the samples. Other evidence that *Staph. pyogenes* mammary infection in this herd was not a major factor in mammary gland deterioration is found in the rate of disappearance of cows from the herd (fig. 4). The average rate of removals by culling or death among infected cows was 24.7 per cent; whereas, it was 20.7 per cent among clean cows.

As the program progressed, the number of old cows remaining in the herd increased. For example, at the end of one year of control, only 9.3 per cent of the cows were in the fifth, and over, lactation; whereas, at the end of the fourth year of control, the percentage of cows in the fifth, and over, lactation was 22.6. In view of evidence that *Staph. pyogenes* was not responsible for major deterioration of the udders in this herd, this extension of productive life, made possible by improved udder health, must, therefore, have been for the most part a consequence of the prior eradication of *Str. agalactiae*.

Effect of Penicillin Infusions.—The efficacy of penicillin infusions for complete removal of *Staph. pyogenes* from infected quarters was found to be markedly influenced by the functional state of the gland. Among quarters receiving penicillin for the first time, 27.6 per cent of lactating quarters responded, in contrast to 66.8 per cent of dry quarters.

A single infusion was not sufficient to secure optimum results in either dry or lactating quarters. For example, among 30 lactating quarters given a total of 100,000 units divided into two or more infusions, 30 per cent responded; whereas, among six lactating quarters receiving the same quantity in a single dose, none were cured. As a rule, multiple infusions also gave better results among infected dry quarters (table 3). Comparable, and nearly optimum, results were obtained in infected dry quarters with a total of 200,000 units given either in two equal doses at 48-hour, or 4 equal doses at 24-hour, intervals. Increasing the total quantity of penicillin beyond 100,000 units in lactating quarters, or beyond 200,000 units in dry quarters, did not result in a marked increase in number of cures. This suggests that the pattern of treatment, beyond certain minimum requirements, was not at fault in the failure to produce cures.

It would appear from table 2 that administration of penicillin beyond the third attempt to cure seldom found conditions so changed that a cure was effected. In reality, with a pattern of treatment capable of producing optimum results, we may anticipate that 80 per cent of the potential cures will be obtained on first treatment. In defining position in the treatment series in table 2, all prior treatments whether administered while lactating or dry were counted. When consideration was limited to only those treatments administered to quarters when dry, that is, ignoring treatments while lactating, it was found that the 169 cures ob-



+ = Infected animals clean in succeeding survey.
— = Clean animals infected in succeeding survey.

Fig. 5—Net rate of new infections compared with net rate of cures in laction age groups (4 years' data).

tained in dry quarters were consummated by the first three treatments; 140 quarters (83%) having responded to the first treatment, 24 quarters (14%) to the second, and 5 quarters (3%) to the third. All further attempts to cure quarters while dry were ineffective.* Also, when consideration was limited to quarters which had been treated exclusively while lactating, or exclusively while dry, then it was found that 74 per cent and 88 per cent, respectively, of the number

* In numerous instances a complete lactation intervened between attempts to cure while dry.

ultimately cured responded to first treatment; and in not one instance was a cure among either of these groups obtained beyond the third attempt. This suggests that status of pathogenesis may be the limiting factor determining response to treatment.

The low level of cures produced in lactating quarters infected with *Staph. pyogenes*, and the refractiveness of about 30 per cent of infected dry quarters to penicillin as administered, suggest that a basic difference existed in the nature of the infections which responded to treatment and those that did not. It appears that the nature of the infection varied with individual quarters and was influenced by the functional state of the gland and, to some extent, by duration of the infection. While it is possible that the rinsing action of milk flow in the ducts may play a part in preventing contact of penicillin with staphylococci in lactating glands and, thus, may explain in part the failures to secure cures, such rinsing action is not operative in dry glands and cannot serve as a basis for explaining the near 30 per cent failure of cures in this group. It may be that, in lactating glands, conditions are favorable for the localization of the staphylococci in and between epithelial cells and, that under such conditions, a protective barrier exists between the organisms and infused penicillin. With drying-off of the gland, the staphylococci may lose their protective position as a result of sloughing and involution of secretory cells. Penicillin administered to the dry gland could, thus, come in contact with staphylococci which were inaccessible during lactation. As a working hypothesis, we propose that the failure of *Staph. pyogenes* mammary infections to respond to penicillin therapy may be related to localization of the organisms in the tissues. This hypothesis lends itself to the finding that a lower percentage of cures was obtained in old cows (fig. 5), where the extent of invasion might be expected to be greater.

This hypothesis, that failure of cures in staphylococcic mammary infections is related to stage of pathogenesis, is not tenable as long as data are lacking to show that failure to cure is not related to penicillin resistance of the particular strain of organism in question. Penicillin sensitivity tests on strains of *Staph. pyogenes* isolated from the herd were not made during the four years covered by this investigation. However, during the fifth year of control, now in progress, all strains of *Staph. pyogenes* isolated from milk samples are being tested for penicillin-sensitivity. During the first five months, the cultures isolated from 62 quarters on 44 different cows have been tested for ability to grow on the surface of veal infusion agar plates containing 0.01, 0.1, 1.0, or 10.0 units of penicillin. Fifty-five cultures were inhibited by 0.1 unit; three cultures grew in 0.1 unit but were inhibited by 1.0 unit; three cultures grew in 1.0 unit but not in 10.0 units; and one culture grew in 10 units of penicillin. Taking growth in the presence of 1.0 unit of penicillin as indicative of resistance, then 6.5 per cent of the infected quarters were harboring penicillin-resistant strains of *Staph. pyogenes* after four years of intensive penicillin therapy in the herd. Nine of the quarters from which this organism was isolated in the fifth year had been treated with four to seven separate series of penicillin infusions. One quarter, treated four times, supplied the strain of *Staph. pyogenes* which grew in the presence of 10 units of penicillin, and another quarter, also treated four times, harbored one of the strains which grew in the presence of 1.0 unit of penicillin. However, the other seven quarters which had received multiple penicillin treatments were shedding *Staph. pyogenes* strains which were inhibited by 0.1 unit of penicillin. Three of these latter quarters had received seven separate series of penicillin infusions, and two of them had received six series. The fact that penicillin-sensitive strains of *Staph. pyogenes* were isolated from these seven quarters emphasizes that the surviving organisms may have been protected in some way (tissue barrier?) from contact with the infused penicillin. Failure of staphylococcic mammary infections to respond to penicillin therapy was not related, to any great extent, to penicillin resistance of the strain of organism in question.

SUMMARY

This study of the control of *Staphylococcus pyogenes* mammary infection, conducted over a period of four years in a large dairy herd, has led to several fundamental observations. In this herd, mammary gland irritation in the presence of infection with *Staph. pyogenes* was usually mild in comparison with the irritation resulting from *Streptococcus agalactiae* and coliform infections which had also existed in the herd. Complete segregation of *Staph. pyogenes*-infected cows from noninfected animals led to a reduction of spread among clean animals. This observation points to the milking act as an important factor in the spread of this infection, and introduces the question of bovine mammary gland specificity of strains encountered. It was also observed that the incidence of infection with *Staph. pyogenes* increased with age in much the same manner as *Str. agalactiae* mammary infection. These two types of infection, however, differ in their response to penicillin therapy. Whereas, streptococcic infections respond to penicillin equally as well

in lactating and dry quarters and show little or no increase in refractiveness to penicillin after prolonged infection, the staphylococcic infections respond to penicillin at a much higher level in dry quarters than in lactating quarters, and long-standing infections were found difficult to cure. It was shown that penicillin resistance of *Staph. pyogenes* strains plays, at best, a minor role in failure of cure. Instead, certain facts point to localization of staphylococci within the tissues as a more tenable explanation of numerous failures to cure *Staph. pyogenes* in lactating quarters and in long-standing infections. Our finding that failure of this infection in dry quarters to respond to penicillin is commonly followed by repeated failures with additional, similar treatments, lends further support to the hypothesis of inaccessibility, or tissue invasion.

Penicillin therapy of *Staph. pyogenes* mammary infection in lactating quarters did not produce a sufficiently high level of cures to merit its continued use in the program, except for the treatment of quarters in which gross symptoms of mastitis appeared. In such cases, the symptoms usually subsided, at least temporarily, following penicillin administration, but the infection, as a rule, persisted. The major progress with therapy was made by treating during the dry period. Optimum results were obtained in infected dry quarters with a total of 200,000 units of penicillin given either in two equal infusions administered forty-eight hours apart, or in four equal infusions administered at 24-hour intervals.

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It takes about thirty-three days for a grossly invisible lymphoid tumor to grow to a visible state in chickens, according to the Regional Poultry Research Laboratory at East Lansing, Mich.

On Treatment of Larval Strongylus Vulgaris (Bloodworms) in Situ

Two recently developed filaricides, diethylcarbamazine (caricide*) and arsenamide sodium (caparside*), were tested for activity against bloodworms *in situ*, *i.e.*, immature *Strongylus vulgaris* in the anterior mesenteric artery.

A course of six consecutive, daily drenches of 25 Gm. of diethylcarbamazine given to a 1,000-lb. Thoroughbred mare did not affect bloodworms in the anterior mesenteric artery. Eighteen viable bloodworms were recovered at postmortem examination conducted forty-eight hours after the course of treatment was completed. Action against strongyles and cylicostomes in the digestive tract appeared to be lacking; strongyle eggs in feces increased from 170 to 1,380 per gram during the eight-day test period.

A course of six intravenous injections of diethylcarbamazine given at 24-hour intervals to a second 1,000-lb. Thoroughbred mare—an initial injection of 8 Gm. in 30 cc. of sterile saline followed by five injections of 4 Gm. in 20 cc. of sterile saline—did not affect bloodworms. Worms recovered at postmortem were all viable. A third 1,000-lb. Thoroughbred, an aged mare 25 years old, was found on postmortem examination to have no bloodworms in the anterior mesenteric artery. The absence of bloodworms indicated an apparent immunity and/or lack of recent opportunity for infection, not an action of diethylcarbamazine. The horse had received 4 Gm. of diethylcarbamazine in 20 cc. of sterile saline three times daily for five consecutive days The strongyle egg count increased from 290 to 520 per gram during the eight-day test period.

Oral administration of 25 mg. per pound of diethylcarbamazine was well tolerated by the first test animal. Intravenous injection of 8 mg. per pound resulted in immediate but transitory hyperpnea, expiratory dyspnea, pronounced vertigo, and muscular incoordination resulting in complete loss of balance. Intravenous injection of 4 mg. per pound produced less extreme, but identical, reactions.

Courses of 15 consecutive intravenous injections of 100 cc. of arsenamide sodium, 10 mg. per cubic centimeter, administered at 24-hour intervals to a 2-year-old Thoroughbred gelding, a 2-year-old Thoroughbred filly, a yearling Thoroughbred filly, and

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The investigation reported in this paper is in connection with a project of the Kentucky Agricultural Experiment Station and is published by permission of the director.

*Trade name.

a yearling ¾ Thoroughbred filly, did not result in apparent action against bloodworms in the anterior mesenteric artery. Postmortem examination of each animal seven days after completion of the courses of treatment revealed viable bloodworms. The examinations indicated that the 2, 2-year-old animals had not sustained massive bloodworm infections prior to the series of treatments. The 2 yearlings harbored 52 and 34 bloodworms, respectively.

Blood samples examined before, during, and after treatment with oral or intravenous diethylcarbamazine did not supply evidence of changes in the blood picture. Progressive increases in leucocytes which accompanied the series of arsenamide sodium injections were established to be related to development of fibrotic areas at the site of injections. Inadvertent delivery of 70 cc. of arsenamide sodium into the neck muscles of 1 experimental animal resulted in the formation of a massive area of fibrosis.—*A. C. Todd, Ph.D., M. F. Hansen, Ph.D., G. W. Kelley, B.S., and Z. N. Wyant, M.S., Department of Animal Pathology, Kentucky Agricultural Experiment Station, Lexington, Ky.*

New Sheep Disease in South Africa

Uitpeloog, or Blouwildebeesoog, is the name of a new and unidentified disease of sheep which spread rapidly in the wake of Blue Wildebeest during a severe drought, according to V. Cooper (*J. South African V.M.A., 19,* (Dec., 1948): 147).

Symptoms are a staggering gait with frequent falling, pronounced exophthalmia in one or both eyes, rolling and twitching of the eyeball, infection of the scleral blood vessels, rhinitis, incoördination, convulsions, progressive paralysis, and death.

In the infected flocks, about 20 per cent of the animals were diseased, and of the ailing animals about 25 per cent died. Attempts at laboratory diagnosis and isolation of a causative agent were negative, and the mode of transmission was not discovered.

Etiology of Infectious Sinusitis.—Presumptive evidence that infectious sinusitis of turkeys is caused by a virus is offered in a report by Jerstad and Hamilton, of the Western Washington experiment station (*Poult. Sci.*, Nov., 1948). Their report also indicates that the disease may be transmitted through the egg.

The turkey crop of 1949 is the second largest of record—29 per cent over last year's.

Porcine Tuberculosis

Swine are very susceptible to avian tuberculosis but rarely transmit it to other swine. During 1948, 6 per cent of the hogs slaughtered under government inspection at Sioux City were retained for tuberculosis. Most of this was the avian strain. All of it could have been prevented by raising and feeding hogs on clean ground, in clean houses, and apart from any contact with the poultry flock.

Feline Influenza

As the late Glen Ebright, well-known feline specialist, used to emphasize, influenza of cats is as distinct an entity as distemper of dogs. Fever and respiratory and conjunctival complications were the recognizable manifestations upon which he placed reliance. In the grave enteritides of cats, the respiratory-ocular phenomena are absent. Feline enteritis is not of dietary origin, he pointed out, and its nature must be sought in the white cell picture which is characterized by pronounced leucopenia and which can be easily determined by the doctor's own diagnostic equipment. In Dr. Ebright's own laboratory, the leucocyte count (in enteritis) fell as low as 1,000 per cubic millimeter from the norm of 8,000 or more.

He said that, postmortem, influenza was readily differentiated by bronchopneumonia, hepatization, and scattered hemorrhages in the lung tissue, none of which occurred in enteritis. Mortality was no criterion, as it ran high or low in either. Intense inflammation of the small intestine and gross changes in the bone marrow, characteristic in enteritis, were absent in influenza. Dr. Ebright found no specific treatment.

Sulfaguanidine in Fowl Coccidiosis.—The therapeutic merits of sulfaguanidine fed to chicks at the rate of 0.5 per cent in mash was established through critical trials carried out at the Beltsville laboratory on 326 chickens artificially infected with *Eimeric acervulina.* Four-day treatment given at the time of inoculation with oöcysts and one, two, three, and four to seven days after inoculation gave interesting results, but given after symptoms had developed, results were negative. Chicks reinoculated after eighteen days showed marked resistance to experimental inoculations.—*From Journal of Parasitology, April,* 1949.

Water containing 2 ppm of fluorine will produce symptoms of fluorosis in young sheep.—*Moule, Australia.*

Progress in Pullorum Disease Control in Poultry

H. VAN ROEKEL, D.V.M., Ph.D.

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A HALF century ago, the etiologic agent of pullorum disease was discovered by Rettger.[1] He first identified it in Indiana, and almost immediately afterward, in Connecticut. The disease was recognized as a serious entity in young chicks and was designated as a "fatal septicemia of young chicks."

PIONEER INVESTIGATIONS

During the first two decades following the discovery of the organism, the disease was studied by only a few investigators. Rettger and Stoneburn[2] found that the organism was egg-borne, which was an important discovery from the standpoint of controlling the disease. Later, Rettger, Kirkpatrick, and Jones[3] disclosed that they had definitely established the complete cycle of infection, which involved an infected hen laying infective eggs and hatching infected chicks which could develop into mature infected birds. It was immediately recognized that, in order to control the disease, it was essential to use only breeding stock which was not infected. Jones,[4] in 1913, and later others (Gage, Paige, and Hyland,[5] Rettger, Kirkpatrick, and Jones[6]) announced the practical application of the macroscopic tube agglutination test for the detection of carriers of the organism.

Following the advent of this test, a number of states instituted pullorum-testing programs for elimination of the disease from commercial flocks. In 1914, Rettger *et al.*[6] tested 14,617 fowl in 107 flocks. Of the flocks, 74 per cent were infected, and 9.8 per cent of the total birds tested were reactors. It is noteworthy that the percentage of reactors in the tested flocks varied from 0 to more than 50. Gage and Paige,[7] in 1915, determined by the macroscopic tube agglutination test and chick examinations that the disease was widespread in Massachusetts. Eradication of the disease was advocated. To insure against infection, poultrymen were advised to buy only from stock known to be free of infection. The authors further stated "that it is possible to rid Massachusetts for the most part of this disease, and that a campaign should be organized against bacillary white diarrhea infection."

From the Department of Veterinary Science, Massachusetts Agricultural Experiment Station, Amherst.

Presented before the Section on Poultry, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

During the early 1920's, workers in several states were devoting considerable attention to the control of pullorum disease. Beaudette and Black[8] reported an average of 15 per cent reactors among tested birds in New Jersey. Bushnell, Hinshaw, and Payne[9] stated that, in a test made on 74 flocks in Kansas in 1924, 78.3 per cent showed reactors and 31.5 per cent of the total birds tested were found to be reactors. In New Hampshire,[10] in 1926, a total of 123 flocks (35,237 birds) was tested, of which 34 were positive. Of the total birds tested, 2.5 per cent were reactors. Similar testing work has been reported for other states and there was general enthusiasm and hope regarding the potential effectiveness of the macroscopic tube agglutination test for the control and eradication of pullorum disease. At this same time, efforts were also directed toward gaining greater insight into the spread of the disease and to seeking improvements in the testing procedures.

EFFORTS TO IMPROVE METHODS OF COMBATING THE DISEASE

In 1926, Hinshaw *et al.*[11] definitely demonstrated that incubator transmission of pullorum disease was a serious problem which should be recognized in its control and eradication. Later, other investigators corroborated these findings, and methods of control were developed.

In the late 1920's, it was recognized that the testing method employed for pullorum disease control should be improved and standardized. Bushnell, Hinshaw, and Payne[9] called attention to the fact that there was a marked difference in the efficiency of the various tests as employed. Considerable study was given to the serum-antigen dilution and also to the need for more than one dilution for effective results.

Recognizing these problems, which were extremely significant from the standpoint of effective control of the disease, the workers engaged in pullorum testing in the New England States organized the Conference of Investigators and Workers in Bacillary White Diarrhea Control in 1928. The purpose was to standardize and unify methods and to stimulate an interest in the practical eradication of the disease from breeding flocks (W.R.H.[12]). Later, this Conference was enlarged to include other eastern states and provinces of Canada. Its formation added great impetus to the progress in pul-

lorum control. Also, at one of the early meetings, it was proposed that the term pullorum disease be substituted for bacillary white diarrhea. This new terminology was internationally adopted because of its brevity, specificity, and appropriateness in designating a disease entity which affected not only chicks but also mature poultry and fowl other than chickens. W. R. Hinshaw, E. R. Hitchner, J. B. Lentz, and L. R. Rettger, responsible for the origin of this Conference, deserve much credit for the progress that followed in later years. Through the years, members of this Conference have made a concerted effort to solve many of the problems met in the control and eradication of the disease.

In 1929, Bunyea, Hall, and Dorset[13] introduced a simplified agglutination test for pullorum disease which was a modification of the rapid serum test described by Runnells *et al.*[14] in 1927. The striking difference between the two methods was that with the simplified test fresh whole blood was used instead of serum, and all the testing operations were completed on the farm. Some advantages claimed for this method over the tube method and serum-plate test were a saving of time and equipment, the elimination of tubed samples, spoilage of blood, and rehandling of birds. In 1931, Schaffer, MacDonald, Hall, and Bunyea[15] announced a modification of this simplified method by introducing a stained, preserved antigen. At the same time, Coburn and Stafseth[16] reported a similar test. This stained antigen, rapid whole blood test, in view of its apparent simplicity, has been widely used, with the result that many infected birds have been detected and, thus, their removal from breeding flocks was made possible. This method is widely used in areas where the serum-plate or tube tests seemed impractical, with the result that flocks are being tested in those areas which would otherwise not be tested. The records reveal that, through persistent testing in these areas with the rapid whole blood test, plus the stimulation of interest in other phases of eradication, the over-all picture of pullorum infection in those areas has greatly improved through the years.

In 1932, the Conference of Research Workers in Animal Diseases of North America[17] formulated "Standard Methods of Diagnosis of Pullorum Disease in Barnyard Fowl," which were adopted by that organization and also by the U. S. Livestock Sanitary Association. Through the years, these methods of diagnosis have served as a valuable guide in the combat against pullorum disease.

Also, during the early thirties, considerable attention was directed toward incubator transmission of the disease and developing means of control. Formaldehyde gas has been found effective for destruction of *Salmonella pullorum* and is widely used in commercial hatcheries. Investigations have revealed that definite procedures must be followed to obtain the optimum results. In 1946, Burton[18] reported and emphasized that at least 150 cc. of formalin and 100 Gm. of potassium permanganate must be used to fumigate 100 cu. ft. of inside incubator space. After twenty minutes of exposure to the gas, complete destruction of *S. pullorum* was observed. It is stressed that factors such as air leakage, improper humidity and temperature, circulation of gas within the incubator, and the duration of fumigation all play important roles in effective fumigation of the incubator. These factors have not always been observed by commercial hatcheries in their sanitation programs. Incubator fumigation should be an integral part of an effective sanitation program but should not be expected to destroy *S. pullorum* inside the egg or within the chick.

NATIONAL PROGRAM FOR THE CONTROL AND ERADICATION OF THE DISEASE

In 1935, the USDA[19] introduced the National Poultry Improvement Plan to improve poultry, poultry products, and hatcheries of this country. One of the objectives was to reduce losses from pullorum disease. This Plan was to be used in coöperation with state authorities in the administration of the regulations. Acceptance of it was optional with states and individual members of the industry within the states. At the outset, 30 states coöperated. The number increased to 44 in 1942 and to 47 in 1948. Table 1 shows the progress which has been

TABLE I—Summary of Pullorum Testing

Season		Pullorum tested	Pullorum controlled	Pullorum passed	Pullorum clean	Totals
1935-36	States	27	.....	7	8	30
	Birds	1,746,751	.....	48,771	257,577	4,329,364
	Reactors (%)	.....	.....	.....	.....	3.66
1941-42	States	38	30	22	20	44
	Birds	8,596,461	3,090,932	909,040	2,310,216	16,859,592
	Reactors (%)	.....	.....	.....	.....	2.65
1947-48	States	24	39	43	36	47
	Birds	1,700,278	12,934,454	6,032,820	6,622,971	30,093,726
	Reactors (%)	.....	.....	.....	.....	1.18

made through the wider application of the pullorum control program.*

It is encouraging to note that the percentage of reactors is gradually being reduced, and that the number of birds in the pullorum-passed and pullorum-clean grades is steadily increasing. At the close of the 1948-1949 season, the pullorum-tested grade will be eliminated from the Plan. It is hoped that, in the near future, the pullorum-controlled class will also be deleted, leaving only classes that do not tolerate infection. In 12 states, no pullorum-tolerance classes are recognized.

TABLE 2—Comparative Testing Results for Flocks with Varying Testing History

Season	Years tested	Flocks	Tested birds	Reactors (%)	Non-reacting flocks
1941	1	33	19,776	0.46	30
	3 or more	210	437,145	0.08	206
1944	1	94	99,346	0.32	81
	3 or more	256	575,749	0.05	247
1948	1	49	56,009	0.17	45
	3 or more	360	996,399	0.07	353

In 1943, the National Turkey Improvement Plan,[20] which may be regarded as a counterpart of the poultry plan except that it was designed for turkeys, became operative. The turkey industry should benefit from a national, uniform plan that recognizes breeding flocks that reveal no pullorum infection. It is significant that the average percentage of reactors on first test was reduced from 1.22 in 1946-1947 to 0.75 in 1947-1948. Several states have already reported no pullorum reactors among their tested turkey flocks, indicating that in certain sections marked progress has been made in eliminating the disease from the breeding flocks. Continued testing will be necessary to further eradicate the disease from the flocks and to ascertain whether they become reinfected.

Recognition of Antigenic Pullorum Variant

Since 1941, a growing interest has developed in the antigenic factors of *S. pullorum*. Younie[21] was the first to demonstrate that serologic variants of *S. pullorum* existed in naturally infected flocks. He stressed the fact that variant infection was difficult or impossible to eliminate from flocks through testing, unless suitable antigens were employed. These findings were later confirmed, and the problem further investigated by Wright,[22] Gwatkin,[23,24] Gwatkin and Bond,[25] and Edwards and Bruner.[26] The antigenic components of *S. pullorum* are described by Edwards and Bruner as follows: "The antigenic formula of *S. pullorum* is IX, XII_1 (XII_2), XII_3. In normal cultures, the XII_2 factor is variable, and forms containing a large amount or a negligible amount of XII_2 can be isolated from the same strain. It is possible for cultures to become fairly well stabilized in either form, thus giving rise to the so-called 'standard' strains and 'variant' or X strains. The standard strains contain only a small amount of XII_2, but the X strains contain a large amount of the antigen."

Wright[27] first reported that variant pullorum strains existed in the United States. This was later confirmed by other workers (Edwards *et al.*[28] and Hall *et al.*[29]). Hall and his coworkers concluded that variant pullorum infection is a factor that is to be considered in the control and eradication of the disease. They further recommended that, in addition to methods employed for routine testing, supplemental tests, such as polyvalent plate antigens or variant tube antigens, be used to detect variant infections whenever difficulties, such as breaks in clean flocks or failure to reduce losses, occurred. They also recommended further surveys to determine the extent of variant infection, and advised that results obtained in field tests with variant antigens should be checked by careful and complete bacteriologic examinations. One may conclude from these findings and recommendations that, in order to expedite the elimination of variant pullorum infection, an antigen which would detect both the standard and variant types of *S. pullorum* would be required. This should be recognized by those engaged in pullorum disease testing.

As testing of poultry has increased, the problem of the doubtful or nonspecific reactor has become recognized. The problem may be influenced by multiple factors, such as serum-antigen dilutions, sensitivity of the antigen, incubation time of the tests, and nonspecific infections. Garrard[30] and his associates report that nonspecific reactions can be attributed, in part, to such organisms as staphylococci, enterococci, and coliform types. Since these organisms, as well as some members of the Salmonella group, may have antigenic components common to *S. pullorum*, this phase of the problem should be further investigated to determine the true significance of these organisms in relation to pullorum disease testing.

Pullorum Infection in Hosts Other than Fowl

During the past twenty years, additional hosts (man, cattle, swine, dogs, foxes, and

* The writer is indebted to Mr. P. B. Zumbro, in charge of National Poultry and Turkey Improvement Plans, for supplying these data.

mink) susceptible to *S. pullorum* have been identified (Benedict, McCoy, and Wisnicky;[31] Edwards, Bruner, and Moran;[32] Brown, Bruner, and Moran;[33] Felsenfeld and Young;[34] Mitchell, Garlock, and Broh-Kahn;[35] and Judefind[36]). In most instances, infective eggs were incriminated as the possible source of infection. To what extent hosts, other than fowl, play a role in the eradication of pullorum disease is difficult to evaluate. Based on the frequency with which the organism is recovered from such hosts, they should receive only minor consideration, yet not be completely ignored in an all-inclusive control and eradication program for pullorum disease. Furthermore, the public health significance of pullorum disease should not be ignored or underrated.

Effective Methods Can Eradicate the Disease

Relative to the practical control and eradication of the disease, effective testing methods, competent testing and administrative personnel, sound control and eradication measures, and coöperation from the industry are essential if success is to be attained. The belief still prevails in too many areas and states that pullorum disease can be satisfactorily controlled by reducing the amount of infection to a low level in the breeding flock. This viewpoint is contrary to the basic ideas long recognized regarding the control, eradication, and prevention of infectious diseases. As long as pullorum infection is tolerated in breeding flocks, unpredictable losses from the disease can be expected. Pullorum outbreaks in young chicks have become a rarity in states that have eliminated the disease from most of the breeding flocks and recognized only tested flocks that can qualify for the pullorum-passed and pullorum-clean grades.

Pullorum disease eradication can be greatly expedited by replacing infected breeding flocks with pullorum-clean stock. Table 2 gives comparative testing results regarding flocks tested for the first year and those tested for three or more consecutive years in Massachusetts. The majority of the first year flocks originated either from pullorum-passed or pullorum-clean sources. The level of infection is slightly higher among first-year-tested flocks. However, the high number of nonreacting flocks in this group definitely shows that buying replacements from nonreacting flocks is an effective and expeditious method of establishing additional pullorum-clean stock. Furthermore, this clean stock must be protected against reinfection, which is the direct responsibility of the flock owner and the hatcheryman. In many parts of this country, the flock owners and hatcherymen fail to understand or recognize the basic principles that must be observed for successful control, eradication, and prevention of pullorum disease. To improve this situation will require more effective educational programs conducted by competent and conscientious personnel. The initial responsibility for this assignment rests with the state livestock-disease regulatory officials, poultry pathologists at state institutions, and the extension service workers. While much progress has been made against pullorum disease, much remains to be accomplished.

The following data reveal the progress which has been made in reducing the pullorum infection among breeding flocks during the past twenty-one years in some of the eastern states. Other states have made similar progress.

	Per cent Reactors Detected	
State	1929	1949
Connecticut	1.9	0.039
Delaware	5.9	0.1
Maine	1.2	0.038
Massachusetts	4.3	0.037
North Carolina	8.4	0.14
Pennsylvania	6.4	0.7
Vermont	5.4	0.00

Among a total of approximately 150,000 birds tested in Vermont in 1948-1949, no pullorum reactors were detected.

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DDT and Other Toxicoses

The recent flurry of discussion regarding the use of DDT *on* milk cows has stirred up more questions than it has answered. Entomologists, however, recommend that methoxychlor, a chlorinated hydrocarbon, be used on milk cows and beef cattle under preparation for slaughter, and also on the feed of these groups, leaving DDT for the spraying of stables and yards.

It stands to the credit of veterinary medicine that it doesn't run wild over the arrival of wonder drugs, long and large scale experience having shown over and over that killers of one sort of creatures must be watched closely for their action on others. This is another way of saying that the use of drugs (including poisonous insecticides) is a professional man's job.

Rabies in Wildlife Overestimated

The widely published contention that eradication of rabies in the domestic dogs can not be accomplished because the disease would still rage in wildlife is not supportable. Better to contend that rabid wild animals are victims of dogs rather than *vice versa*.

The short duration of the infective stage and the segregated life of the biting wild animals would soon put an end to rabies among them, were there no rabid dogs running amok. If not an intentional evasion of rational epizoötiology (in order to absolve the dog), turning toward wildlife and away from the unmanaged dog is putting the chaise ahead of the nag in setting out to control rabies.

NUTRITION

The Response of English Bulldog Puppies to Thyroidal Stimulation

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INVESTIGATIONS on the role of the thyroid gland in the growth and maturation of dogs have been conducted in three ways. First is the removal of the gland in puppyhood and observations of the resulting syndrome. Second is the replacement with exogenous thyroid of the thyroid secretion of the animal thyroidectomized in puppyhood. The third method is to administer the thyroid hormone to intact animals to hasten normal growth and maturation.

The influence of hypothyroidism, as induced by thyroidectomy and goitrogens, on the growth rate in dogs has been studied by several workers. Thyroidectomy, in most cases, produces a dwarfed individual with deformities resembling cretinism in human beings.[2, 5, 7, 14] Dwarfism is not produced in all dogs, probably because of the frequency of accessory thyroid tissue.[19] Propylthiouracil failed to decrease the growth impulse of Beagles when administered during the growth period.[13]

Dosage is an important factor in determining the results obtained from feeding thyroid during the growth period of dogs. Moussu,[14] working with mongrels, found an increased rate of growth when he fed small amounts of thyroid. When he fed larger amounts, the dogs lost weight and died. The final weights of his thyroid-treated dogs were no greater than those of the controls. Dott,[5] using a large dosage of desiccated thyroid (70 mg./kg./day) during the growth period, found an increased growth rate, but the dogs matured at a subnormal size. When protamone* was given to growing Collies at the rate of 2 and 4 Gm./100 lb. of dry matter consumed,[4] there was an increased rate of growth and a greater efficiency of gain. The greatest effect was seen on the 4-Gm. dosage.

A similar experiment was conducted by the same workers on Cocker Spaniel-Pointer crossbreds, using 2, 4, and 8 Gm. of protamone per 100 lb. of dry matter consumed. In this case, there was no appreciable effect on the growth rate and efficiency of gain. X-ray observations in the Collies and Cocker-Pointers revealed no increase in the rate of ossification of the epiphyseal cartilages of several joints. Perhaps the Cocker-Pointers already have an optimal thyroid secretion rate for growth.

The investigations reported herein were undertaken to determine the response of English Bulldog puppies to mild hyperthyroidism. Particular attention was paid to the growth rate, body measurements, general appearance, behavior, rate of dentition, and efficiency of gain.

EXPERIMENTAL PROCEDURE

Seven English Bulldog puppies were put on the trial immediately after weaning. The control group consisted of 4 dogs: 1 and 3, male; 5 and 6, female. The protamone group consisted of 3 dogs: 2 and 4, male; 7, female.

Dogs 1 and 2, littermates, were 64 days old at the start of the trial and weaned fifteen days previously. Dogs 2, 3, 4, 5, and 6, littermates, were 53 days old at the start of the trial and weaned two

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*Protamone is the commercial name of thyroprotein donated by Cerophyl Laboratories of Kansas City, Mo.

days previously. Dog 3 was nursed by a foster mother and, thus, had a better start than his littermates. The ancestry indicates that all the pups were of the smaller type of English Bulldog.

The ration during the trial consisted of canned dog food (a), condensed milk, and dry meal (b). For the first five days on experiment, the ratio of nutrients was 910 Gm. of canned dog food, 470 Gm. of milk, and 400 Gm. of meal. For the next twenty-eight days, the ratio was 1,135 Gm. of canned dog food, 1,092 Gm. of milk, and 500 Gm. of meal. For the next fifty-four days, the ratio was 1,135 Gm. of canned dog food, 728 Gm. of milk, and 1,800 Gm. of meal. For the remainder of the experiment, the ratio was 1,362 Gm. of canned dog food and 2,800 Gm. of meal. Protamone was mixed

TABLE 1—The Effect of Protamone on Body Measurements of English Bulldog Puppies

Control group	Day of measurement	Heart girth (in.)	Flank girth (in.)	Length (in.)	Height (in.)
Dog 1—male	53	19	20	21	12
	118	23	20	29	14½
Dog 3—male	53	21	21	25	13
	118	24	21	30	15½
Dog 5—female	53	16	17	21	12
	118	21	19	29	14½
Dog 6—female	53	16	17	22	11
	118	21	19	29	14
Protamone group					
Dog 2—male	53	19	17	24	13
	118	22	20	29	14½
Dog 4—male	53	19	18	22	13
	118	25	23	33	15½
Dog 7—female	53	18	17	23	13
	118	23	20	29	15

with the meal, so that it comprised 4 Gm./100 lb. of dry matter fed. The pups were fed three times daily for the first three months on experiment, and then were fed twice daily for the remainder. They were given the amount that they would clean up in thirty minutes at a feeding. Each pup was given ½ teaspoon of cod liver oil and 7½ gr. of dicalcium phosphate three times weekly. All pups were permanently immunized against distemper and treated for a light infection of ascarids and hookworms. No ill effects followed this treatment. Studies with radioactive iodine (I^{131}) were conducted on the pups on the forty-eighth day of trial to determine to what extent the protamone depressed the thyroid secretory rate. A dose of 2 cc. of radioactive iodine solution registering 2,000 counts per minute on the Geiger-Muller counter was injected into the radial vein. Counts were taken over the thyroid gland region and the extremities with a Geiger-Muller counter at intervals of seven and a half, fifteen, and thirty minutes, and one, two, four, eight, sixteen, thirty-two, and sixty-four hours.

EFFECTS

The protamone group of dogs became more alert and aggressive by the second week of trial, and this effect was definitely more pronounced after the first month on trial. These pups also showed more intelligence in their movements. For instance, pups naturally resent being weighed and having their teeth examined. The controls continued to come to the side of their pen after the first pup in the group had undergone the above determinations, while the protamone group retreated to the corner when they observed the first pup being handled. They were more aggressive at play. By the second month of the experiment, they were cleaning up their food at a markedly greater rate than the control group.

Throughout the experiment, the coat of each dog was in good condition. However, after the first month on experiment, the coat of the protamone group was a darker brindle than the control, even though all pups were about the same color at the start of trial.

At the beginning of the experiment, there was a lack of uniformity in size and appearance in both groups. By the second month on trial, the protamone group appeared more uniform and mature than the controls. These effects became more pronounced during the remainder of the experiment. By the third month, the protamone group had more protruding lower jaws, more wrinkled faces and, generally, showed the more rugged appearance of the adult English Bulldog. By the fifth month on trial, they appeared to be about a month older than the control group (fig. 1). The rate of dentition did not appear to be appreciably affected by the administration of the drug in this trial.

TABLE 2—The Effects of Protamone on the Body Weight of English Bulldog Puppies

Control group	Wt. start of trial (kg.)	Wt. 158 days on trial (kg.)	Wt. 180 days on trial (kg.)
Dog 1—male	2.980	16.010	16.390
Dog 3—male	4.475	17.830	18.610
Dog 5—female	2.737	13.100	14.470
Dog 6—female	2.570	11.970	12.960
Protamone group			
Dog 2—male	4.855	16.095	15.750
Dog 4—male	2.273	20.630	21.100
Dog 7—female	2.800	16.320	17.190

The body measurements showed a trend toward a more mature type of dog in the protamone group. As an animal matures, the heart girth becomes larger in relation to the flank girth. The measurements of the males of the control group showed a greater flank girth than heart girth until the eighty-first day of trial, while the heart girth of the males of the protamone group was greater than the flank girth on the fifty-third day of trial, when the first

(a) Pard marketed by Swift & Co. of Chicago, Ill.
(b) Gropup donated by the Kellogg Co. of Battle Creek, Mich.

measurements were taken. Toward the end of the trial, the ratio between the heart girth and the flank girth became similar in both groups. In the control females, the heart girth did not become greater than the flank girth until a period between measurements taken on the eighty-first and 109th days of trial. The female in the protamone group evidenced a larger heart girth than flank girth when the first measurements were taken on the fifty-third day of the trial (table 1).

Of the other measurements, the female of the protamone group was taller and longer than the control females. There was no marked difference between the males (table 1).

After 158 days on trial, the males of the protamone group were 8.5 per cent heavier than the male controls, and the female of the protamone group was 30.2 per cent heavier than the female controls. At 180 days on trial, the controls had begun to catch up to the protamone group, inasmuch

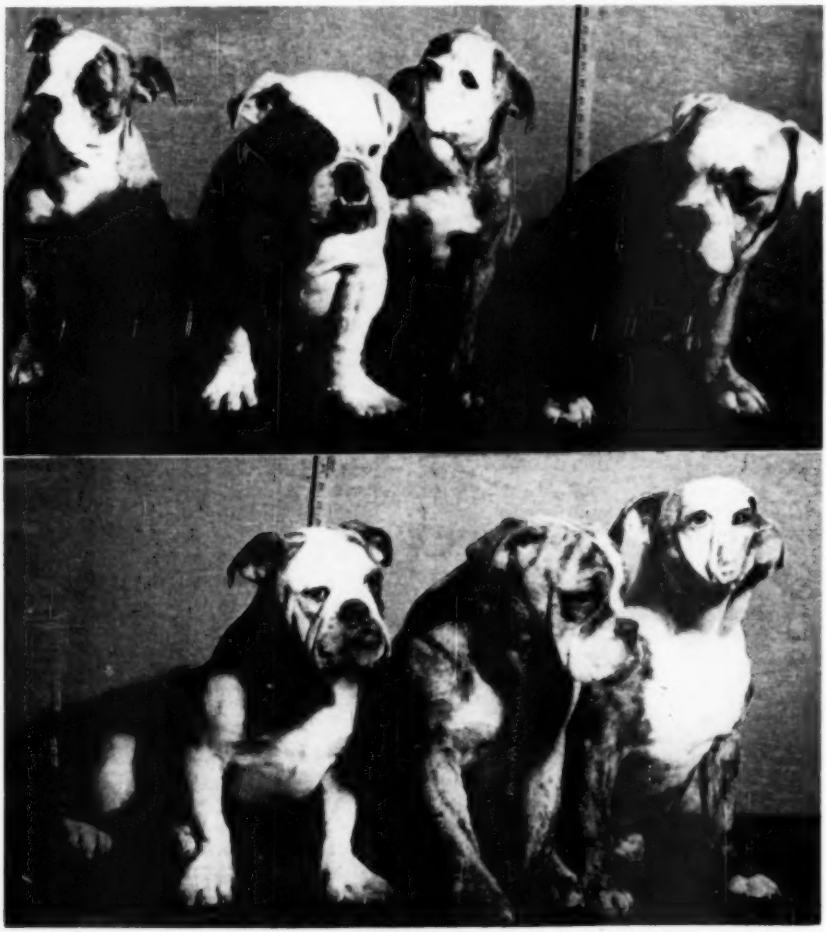

Figure 1

Top—Control group of English Bulldog puppies at the end of the trial. Left to right are dogs 5(female), 1(male), 6(female), and 3(male).

Below—Protamone group of English Bulldog puppies at the end of the trial. Left to right are dogs 2(male), 4(male), and 7(female). Notice the greater uniformity, the wider-chested and more robust individuals, the more adult type face, and the greater size.

as the males of that group were 5.3 per cent heavier than their controls and the females were 25.3 per cent heavier than their controls. It may be noted from figure 2 that the response in weight gains was more rapid in the female than in the males.

The total gain for the period was 46.1 kg. for the control group and 43.1 kg. for the protamone group. A total of 21.3 Gm. of protamone were consumed. The efficiency of gain in the protamone group was 3.11 per cent greater than that of the control group, probably because of the more rapid gain in the former (table 3).

The thyroid gland has the unique ability to concentrate iodine from the blood stream and incorporate it into thyroid hormone. The hormone is then discharged at a rate depending on the thyroid balance of the individual dog. By the use of radioactive iodine administered in tracer amounts, both the rate of uptake of iodine by the thyroid and its discharge from the gland may be followed in the intact dog by taking counts over the thyroid region with the Geiger-Muller counter. Two significant values that can be calculated are: first, the "t" value or relative amount of the injected dose concentrated in the thyroid region at a given point in time; and, second, the biologic half-life. This is the time required for one half of the radioactive iodine concentrated by the thyroid to be discharged. In a relatively active thyroid, the iodine will be turned over faster than in a less active one and, therefore, the biologic half-life will be shorter.*

The radioactive iodine determinations revealed a 24 per cent reduction of the thyroid function of the protamone-treated dogs. The regression formula for the logarithm of the t values (a) is,

$$Y = -0.01003\,x - 2.6488,$$

where Y is the t value and x is the time in hours. From the constants in this formula, it is evident that the relative output of the thyroid glands of these pups is equal to 2.25 times 10^{-5} t values per hour (b). The biologic half-life of radioactive iodine in these dogs is 69 hours (c).

For the pups on protamone, with a regression formula of

$$Y = -0.1131\,x - 2.8194,$$

the relative output of the thyroid glands is 1.71 times 10^{-5} t values per hour (d) with a biologic half-life of radioactive iodine of 61 hours (e).

These figures demonstrate a depression in thyroid gland function of about 24.0 per cent (f) in the protamone-treated pups as compared with the controls.

TABLE 3—The Efficiency of Gain and Amount of Protamone Received

Months on trial	Amount of dry matter consumed (lb.)		Efficiency of gain*		Protamone received by experimental group**
	Controls	Protamone	Controls	Protamone	
1	107.4	90.5	4.1	4.1	8.1 mg./kg./day
2	84.7	87.8	3.0	4.1	4.7 mg./kg./day
3	103.7	112.1	6.1	5.4	4.3 mg./kg./day
4	124.4	112.1	7.3	6.7	3.5 mg./kg./day
5	137.9	100.9	11.4	8.0	2.7 mg./kg./day
last 8 days	30.8	30.3	Wt. Loss	25.0	2.9 mg./kg./day
Totals	589.0	533.7	12.8	12.4	

*Kilogram of dry feed per kilogram of gain in body weight.
**Based on average of weight at beginning and end of the month.

DISCUSSION

The increased rate of growth, earlier maturity, and greater mental alertness when protamone was added to the diet of English Bulldog puppies suggests that the English Bulldog is a relative hypothyroid breed and, thus, benefits from a higher concentration of thyroid hormone during the growth period. Stockard[19] suggests the same thought in discussing the thyroid histology of the English Bulldog. He describes the thyroid gland as being small in relation to that of other breeds. The follicles in the thyroid are also small and suggestive of malformation. Stockard also describes the English Bulldog as a breed having a low metabolic rate, low food intake, and a tendency toward obesity, all indications of hypothyroidism. Since cretinism is believed to be hereditary in human beings, it is conceivable that in dogs, some breeds may have hypothyroid tendencies, inasmuch as most

*The essential computations were made by the following formulas:

(a) $t\ \text{value} = \dfrac{\text{Counts per minute over thyroid region per kg. body weight}}{\text{Counts per minute injected}}$

(b) Relative output of I^{131} for control pups is $(-0.01003)(-2.6488) = 2.25$ times 10^{-5} t values per hour.

(c) Biologic half-life for control pups is $\dfrac{0.693}{0.01003} = 69$ hr.

(d) Relative output of I^{131} for protamone pups is $(-0.01131)(-2.8194) = 1.71 \times 10^{-5}$ t values per hour.

(e) Biologic half-life for protamone-treated pups is $\dfrac{0.693}{0.01131} = 61$ hr.

(f) Depression of thyroid secretion rate is $\dfrac{(2.25 \times 10^{-5}) - (1.71 \times 10^{-5})}{2.25 \times 10^{-5}} = 24.0\%$ reduction.

of the breeds of dogs are the results of extensive inbreeding.

On the hypothesis that the English Bulldog is a hypothyroid individual, it was to be expected that exogenous thyroid would bring about a greater mental alertness. Slow cerebration or dullness of the sensorium are symptoms of hypothyroidism in man.[20]

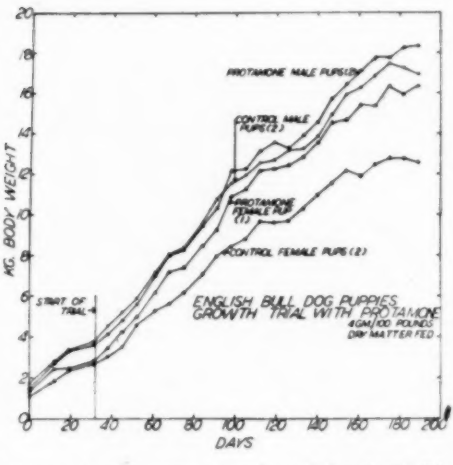

Fig. 2—Growth curves of male and female English Bulldog puppies in the control- and protamone-fed groups. Notice the marked difference between the females, especially when protamone was given.

The darker coat in the protamone group may be a more mature type of coat, inasmuch as the mothers of the pups had darker coats than the pups. It has been demonstrated that chicks will have a more mature type of feathering under thyroprotein administration.[15]

The more mature appearance of these pups is similar to the results obtained in swine[16] and in dogs.[14,5]

The earlier maturation in the protamone group was reflected by their body measurements. As dogs mature, their heart girth becomes larger in relation to the flank girth. The protamone-treated pups were seen to develop a larger heart girth in relation to the flank girth earlier than the control group. Moussu[14] reported a more pronounced change in body measurements of mongrels upon administration of exogenous thyroid than was found by us. Perhaps this is a breed variation. Since the dosage of exogenous thyroid used was within physiologic limits, it did not cause a premature cessation of growth at a subnormal size as reported by Dott[5] when he administered a much larger dosage of thyroid.

The more rapid increase in body weight seen in the protamone-treated pups is similar to that seen in Collies[4] and in swine.[16] The reason for the greater increase in weight in the female as compared with the males when protamone was fed is a matter for speculation. Perhaps, greater numbers would have clarified this point. One male dog (2) showed no increase in growth while receiving protamone when compared with its littermate control (1). There may be a strain difference in Bulldogs which determines the response.

The increased efficiency of gain found in the treated group is probably due to the more rapid growth. Increased efficiency of gain has generally been reported in those species in which the growth rate is increased by exogenous thyroid. Examples of this are found in mice,[11] Collies,[4] and swine.[16]

The thyroid hormone aids in attaining a greater efficiency of food utilization. Fink[9] has demonstrated increased secretion and peristalsis of the intestine when dogs were given dried thyroid. Althausen[1] has reported increased intestinal absorption in rats under the influence of the thyroid hormone.

Good nutrition is essential when normal growth is augmented by the use of thyroid hormone. Drill,[6] in his review, discusses the increased vitamin requirements when the concentration of thyroid hormone increases.

It would be interesting to note if the final weight attained by the dogs in both groups would be equal, as indicated by work on mice[17] and dogs,[14] or if the final weight attained would be greater than in the controls such as is reported in thyrotoxic girls.[10] If the English Bulldog is genetically hypothyroid, one would expect a larger-than-usual individual to be produced by thyroid administration. In human cretins, thyroid therapy will enable them to attain a greater size than they could if left untreated (Webster, 1939).

It is evident from the results obtained in this work, that the exogenous thyroid had its main effect during the rapid-growth period, when the concentration of growth hormone is believed to be highest. It is the general consensus that the thyroid hormone acts to augment the growth hormone.[8,18] Thus, exogenous thyroid cannot be expected to have any effect upon the growth rate at any other time than in the growth period.

Radioactive iodine determinations on the forty-eighth day of trial revealed about a 24 per cent reduction in the function of the thyroid glands of the pups on protamone when compared with the controls. It is the opinion of Hurst and Turner (1947) that

the amount of exogenous thyroid administered must be greater than the animal's own thyroid secretion rate to increase the rate of growth. The results obtained here are not in entire agreement with this opinion since the thyroid gland activity is not completely suppressed. The results with radioactive iodine indicate that the thyroid gland is not suppressed to such an extent that it would not be able to resume its function when the thyroid administration was stopped. Thus, it appears safe to administer thyroid during the growth period without danger of having a hypothyroid individual when the thyroid administration is stopped.

The dosage of protamone received by the pups while on trial is within the tolerance levels determined by other work done at this laboratory. Only in the first month on trial was the dosage of protamone near the upper level of tolerance (8 mg./kg./day) determined by work on intact adult dogs. Toward the end of the trial, the dosage was near the therapeutic level (1 to 2 mg./kg./day) determined by replacement therapy on adult thyroidectomized dogs.[3]

Since the cost of protamone is low and there is a broad tolerance range for thyroid hormone in dogs, it seems feasible to try it in kennels at the dosage used here. The response of the other brachiocephalic breeds would probably be similar to that of the English Bulldog. Stockard[19] has described a similar thyroid gland histology for all of the Bulldog breeds. From work done on other species, it appears best to start the dosage of exogenous thyroid as soon as the animal begins to consume solid food. The thyroidal substance is probably best put in the ration so that the animal regulates its own dosage. Since the food intake and thyroid activity of animals normally decrease with increasing age, this method of administration automatically compensates for these changing factors.

The use of protamone in growing pups of those breeds tending to be hypothyroid could result in more robust individuals that would probably have a greater resistance to puppyhood diseases.

SUMMARY

1) Protamone, at the dosage of 4 Gm./100 lb. of dry matter consumed, resulted in increased growth and hastened maturity in English Bulldog puppies started on dosage at weaning.

2) The protamone-treated pups were more aggressive and mentally alert than the controls.

3) The efficiency of gain was 3.11 per cent greater in the protamone-treated pups than the control pups. With the number of pups involved, this is not a significant difference.

4) Studies with radioactive iodine on the forty-eighth day of trial indicated a 24 per cent reduction of the thyroid function of the pups receiving protamone.

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Vitamin Synthesis and Utilization

Vitamin synthesis takes place in the intestinal tract of animals, from bacterial action, but utilization of the products of such microbial synthesis takes place only after death of the bacteria. The fact that this activity occurs in the rumen of the bovine but in the large intestine of most nonruminants accounts for the more effective assimilation and utilization of such products by the cow.

The nutritional deficiencies of baby pigs, which may be responsible for excessive losses, are being studied by making chemical analyses of sow's milk at the Oklahoma Agricultural Experiment Station.

Steers tempted in various ways to take overdoses of urea in feed never ate enough to cause apparent injury in feeding trials at Oklahoma Agricultural Experiment Station, but large doses given through a stomach tube caused death — apparently from rapid rise of ammonia in the blood.

Discovery of biocytin, a vitamin factor of unknown nutritional application, has been announced by scientists of Merck & Co. and Sharp & Dohme, who worked jointly on the project. It takes four months to prepare pure biocytin from yeast extract, which is the best available source and contains only 1 part per million.

When sows lose their pigs a month to six weeks before normal farrowing time, iodine deficiency should be suspected, particularly if (1) the herd has not been troubled with brucellosis or influenza and (2) hairless pigs have been born in the area or in the herd.

Urea in Amino Acid Synthesis.—Studies by Loosli and others at Cornell University (*Science*, Aug. 5, 1949) demonstrated that the ten essential amino acids are synthesized in large amounts in ruminants fed urea as the only dietary source of nitrogen.

Thiamin in Fern Poisoning

The February, 1948, JOURNAL (p. 154) carried a suggestion that thiamin "might give surprising results" in the treatment of fern, or bracken, poisoning in cattle. Basis for this editorial comment was work done at Oregon State College wherein toxic effects of a 40 per cent fern diet were eliminated in rats by the feeding of 0.5 mg. of thiamin per day.

British investigators (*Vet. Rec.*, Aug. 27, 1949) now report apparent success with this line of treatment in curing "bracken staggers" in an experimental mare which sickened on a ration containing up to 75 per cent of dried ferns (*Pteris aquilina*). The thiamin, in doses of 100 mg., was given by subcutaneous injection, twice the first day and once a day for several days thereafter.

Roentgen Ray Shield.—Cysteine, derivative of the amino acid cystine, protected live laboratory animals against lethal exposure to x-rays in experiments conducted at the Argonne National Laboratory. Given orally or intramuscularly, cysteine protected 80 per cent of the treated animals, while 90 per cent of the checks were killed.—*From a Press Report.*

Mepacrine hydrochloride, given in the drinking water, recently was reported by British workers as useful in the prevention of cecal coccidiosis. Subsequent controlled research by other investigators (*Vet. Rec.*, Aug. 13, 1949), in which mepacrine was compared with sulfamethazine, showed that the former was of no value while the sulfonamide was highly effective.

Vitamin B_{12} does not appear to play a significant part in cobalt metabolism in lambs. Cornell University investigators have reported (*Science*, July 15, 1949).

Lead Toxicosis.—The reckless handling of lead paint about the farm, or access to it on freshly painted objects by animals, is something too easily forgotten in veterinary practice. Minerally deficient livestock seem to develop a craving for lead. Small amounts of lead ingested are capable of causing severe illness and death. The symptoms are those of grave gastrointestinal irritation and nervous phenomena.

A British practitioner (*Vet. Rec.*, Aug. 13, 1949) believes that cobalt produces a markedly beneficial effect when given along with phenothiazine in treating strongylosis of cattle and horses.

EDITORIAL

The Practitioner and the Brucellosis-Eradication Program

The first link in a noteworthy chain of circumstances was forged by a group of practicing veterinarians who met at Columbus, Ohio, as a special committee of the AVMA on Oct. 10, 1949. The members of this committee agreed on certain basic recommendations predicated on the fact that "the services of the practicing veterinarian are essential for a complete brucellosis-eradication program." (*See* News Section for Committee's report.)

Succeeding links in the chain were the presentation of these recommendations to the Board of Governors of the AVMA for approval, then to the National Brucellosis Committee, to the National Assembly of Chief Livestock Sanitary Officials, and to the Brucellosis Committee of the United States Livestock Sanitary Association. The latter Committee incorporated the recommendations as amendments to the basic four-plan program for brucellosis eradication as adopted by it in 1947 and amended in 1948. The committee report, including the amendments, was approved on the floor of the meeting of the U.S.L.S.A. and later adopted by its executive board.

The activities of the AVMA Committee on Practitioner Participation in Brucellosis Control should serve as a pattern for, and an inspiration to, other AVMA committees. The courtesy shown members of this committee by the several groups before which they appeared, and the seriousness with which their recommendations were received, prove conclusively that coöperation is possible when leadership is provided. Many other AVMA committees are capable of providing the same type of leadership, if they will first sit down together and formulate a positive program and then enlist the coöperation of other organizations or constituted committees thereof.

By their action, these AVMA committee members have indicated to the world that leadership in brucellosis eradication is available within the ranks of practicing veterinarians. In a sense, this places an obligation and a responsibility upon every veterinarian in private practice. The concluding statement of the Committee's report implies that practitioners will participate in, and actively support, brucellosis-eradication programs. The JOURNAL has repeatedly pointed out the need for active support by practitioners. It has also indicated the detrimental effect of emphasizing details, in which honest differences can occur, instead of concentrating on the few fundamental truths accepted by all veterinarians, but which must be understood and adopted by livestock owners before they can understand the details which veterinarians are discussing.

The JOURNAL editorial for November listed some of the simple truths and undisputed facts which practicing veterinarians should be stressing in their daily contacts with livestock owners. The dairyman who owns a clean herd, and 80 per cent of all dairymen do, deserves advice on the procedures which will keep his herd free from brucellosis, rather than a confusing array of statements and ideas regarding the details of an occasional problem herd from which rapid eradication of the disease is impossible. The dollar value of the clean herd is an important incentive toward keeping infection out, and this needs to be kept foremost in the minds of herd owners.

On a single herd basis, the following losses may be anticipated when brucellosis is introduced into a previously uninfected herd:

Milk production will be reduced 22 per cent.

Calf crop will be reduced 40 per cent.

Sterility will destroy the value of 1 in every 5 cows which abort.

Infertility will cause reacting cows to reproduce less regularly.

Replacements will be required at a 30 per cent greater rate.

The net result of all these will be a decline of 20 per cent in the gross income from the herd and a financial loss in almost every herd, despite the many long hours of hard work entailed in the care of these animals during the year.

Whenever and wherever livestock owners have recognized the value of eradicating disease and operating with completely healthy animals, they have been enthusiastic supporters of those programs which result in herds and areas free from preventable diseases.

Though lacking the spectacular manifes-

tations of foot-and-mouth disease, contagious pleuropneumonia, rinderpest, and other diseases, brucellosis undoubtedly exacts economic extortions of major significance. The estimate of a $100 million annual loss because of this disease is probably conservative in this period of high livestock prices. The practicing veterinarian is charged with the responsibility of reducing or eliminating this extortion in the interest of more economical livestock production, more abundant human food of animal origin, and better health for those who work with and care for animals.

Because brucellosis has apparently stepped into the No. 1 spot in the over-all disease-eradication program, a brief review of the history of this disease will serve as a substantial background upon which to engage in authoritative discussion. Such discussion is necessary with physicians and public health workers, for few among them have a clear understanding of the true importance of brucellosis and the position of the practicing veterinarian in combating the human as well as the animal phases of the disease.

J. A. Marston, in 1863, described "a febrile disease differing from other fevers" among the Mediterranean populations.

Sir David Bruce, in 1887, reported isolation of a specific bacterial agent from victims of this "febrile disease," and from goats.

Bernard Bang, in 1897, reported finding bacteria which caused "contagious abortion" of cows.

Jacob Traum, in 1914, isolated an organism from fetuses of aborting sows.

Alice Evans, in 1918, demonstrated that the organisms of Bruce, Bang, and Traum were morphologically similar and should be classified together.

A. V. Hardy, in 1930, wrote fluently of the imposing relations between Brucella bacteremia and localization as polyarthalgia and polyarthritis in human and veterinary medical patients.

I. F. Huddleson, in 1943, associated suppurative processes with brucellosis.

These names, dates, and brief facts seem to provide a minimum of history upon which to discuss the complexity of the public health and human infection aspects of the brucellosis problem. Combined with the herd health and animal infection aspects, they provide a needed balance.

International Pharmacopoeia.—The first international pharmacopoeia is about to be published by the World Health Organization. World standards of purity, composition, production methods, and properties of drugs are announced as the objectives.

Incidence of Bovine Brucellosis in the United States

The magnitude of the bovine brucellosis problem was shown in the U.S. BAI release of August, 1949, containing figures compiled (with state coöperation) for the fifteen-year period 1934-1949:

Herds tested	7,686,060
Cattle blood-tested	91,787,795
Reactors found	3,946,369
The situation as of June 30, 1949, shows:	
Herds under supervision	2,165,364
Cattle under supervision	17,126,480
Counties—	
modified accredited	470
Herds accredited	42,595
Cattle accredited	896,715
Calves vaccinated since 1941	5,590,294

Inasmuch as these figures are derived to a large extent from the country's 26,000,000 dairy cattle, they not only show the magnitude of brucellosis eradication but also that, despite disagreements among the states as to method, the veterinary service is not neglecting its duty.

State Vs. Private Veterinary Service

The number of veterinarians needed to render adequate service to a given number of animals varies with the species of animal, the type of agriculture, and the service rendered or made available. A. M. Diesel emphasized this variation (*J. South African V.M.A., 19,* Dec., 1948:125-127) in discussing the accompanying table.

Country	Total Veterinarians	Fulltime State Service (%)	No. of Livestock in 1,000's per veterinarian
U. S. A.	12,500	12	15
Canada	1,250	25	16
New Zealand	115	33	300
United Kingdom	1,870	17	10
Netherlands	500	3	6
Norway	197	3	15
Denmark	1,076	4	5
Switzerland	610	2	4
Union of S. A.	266	33	200

Among the factors bearing on the relative numbers of state-employed and privately practicing veterinarians, two seem to justify special consideration: (1) the degree to which the government is prepared to permit practitioners to assist in disease control programs; and (2) the degree to which the practicing veterinarian regards as worthwhile the part-time or intermittent employment offered him under these programs.

In his presentation, Dr. Diesel suggested

that a national veterinary service can be of such a nature that the government provides every service connected with the keeping of livestock which are concerned with the economy of the country, leaving for the private practitioner only such matters which the government considers have no bearing on the country's economy. Alternatively, he said, private veterinarians might be employed either on a part-time basis, or intermittently, or in both ways. He regards the 57 veterinary clubs in New Zealand, which employ veterinarians to attend the animals of suppliers to coöperative dairies, as favoring a government service, while in England, where we find a definite trend toward nationalization of industries and the professions, the reverse appears. Namely, the Animal Health Trust, a private institution, has been formed to assist the private practitioner.

Exception to this stand was taken by C. F. B. Hofmeyr on the grounds that: (a) A free government clinical service is not justifiable on economic grounds; (b) efficient clinical service demands willingness to hold oneself at the disposal of the public at all hours and every day of the week; (c) a government clinician would be at the beck and call of all stock owners in his area, and the equitable distribution of his available time would be impossible—which would lead to complaints and friction; (d) the government has been unwilling to supply the drugs, instruments, and facilities necessary for satisfactory clinical work; (e) the only promotion in such a service is to administrative posts; (f) full professional freedom cannot exist under a government system, and to place all members of the profession under such a system would be tantamount to handing it over "gagged and bound."

Dr. Hofmeyr suggested that the government should maintain a fulltime staff of epizoötiologists for control of "scheduled" diseases, with private practitioners augmenting the force on a part-time basis. Neglect of duties under the program would result in dismissal and appointment of another practitioner—thus, the delinquent would compete with subsidized opposition.

The Perfect Score.—In the matter of certifying to the health of cattle for export to the United States, Veterinary Director General Childs, in an official document, directs that "veterinary practitioners who are registered and in *good standing in their respective provincial veterinary associations* (italics ours) will, on application to the V.D.G., be authorized to test cattle for export."

Brucellosis Vaccination

From a prolonged and large scale experience (5,000 cows and 50,000 ewes), Reydellet (*Rev. Méd. Vét.*, 1948, abstr. in *Rec. Méd. Vét.*, June, 1949) concludes that live culture vaccination does not solve the important problem of prophylaxis. The infection evolved normally in the vaccinated as well as in the controls, *i.e.*, the vaccination did not alter the evolution of the disease in mature animals. On the contrary, the vaccinations rendered difficult the detection of the dangerous spreaders, harmless as it is to both man and animals. That Dubois' vaccine (strain 19) owes its popularity to ease of administration and the absence of anything better was the cold conclusion. To his colleagues, the author poses the question "What do you think?"

NOTE.—Not true of vaccination results on *calves* in the United States. It could be true of mature sows and sheep.—ED.

The Two Unconquered Fowl Plagues

True *fowlpest* and *pneumoencephalitis* (Newcastle disease), the two major plagues of poultry, have been shown and are considered to be clinically and immunologically distinguishable contagions. The theory that there is but one pest virus (with variants) responsible for the ravaging poultry epizootics of the Orient (India, Philippines, Japan, Egypt, China) has lost influence since 1927, when Doyle demonstrated the duality of so-called fowlpest by discovering in England the specific virus responsible for poultry enzoötics in the region of Newcastle.

Cross-immunity experiments and clinical evidence should have removed all doubt by now as to the duality of these two great poultry plagues.

Since true fowlpest has visited the United States on two recent occasions and the other seems to have taken permanent residence here, it is fitting for the veterinary practitioner to keep abreast of the times on the knowledge of "The Two Unconquered Poultry Plagues."

As in the case of foot-and-mouth disease, the successful campaign against fowlpest depends a great deal on alerted practitioners.

To illustrate, recent epizoötics in poultry in several departments of France (*Rev. Méd. Vét.*, May, 1949) led to considerable controversy among practitioners until scientific investigations established Newcastle disease, not fowlpest, as the right diagnosis.

The purpose of the Iowa Veterinary Diagnostic Laboratory is to support (not supplant) the veterinary practitioner.—*J. R. Collier, D.V.M., Iowa.*

CURRENT LITERATURE

ABSTRACTS

Swine Erysipelas Immunization

Various methods of active immunization against swine erysipelas are reviewed. The theoretic superiority of Traub's adsorbate vaccine over the Russian formolized, and the Japanese Kondo, vaccines, as well as over the older simultaneous method, is emphasized.

The pathogenicity of 70 strains of *Erysipelothrix rhusiopathiae* for swine (percutaneous method) did not correspond to the pathogenicity for mice. Fortner's observations concerning the existence of erysipelas-resistant swine families were confirmed. Experiments are being conducted to learn whether hemagglutination may be used as a test of the potency of erysipelas antiserum.—[*H. Scheller and Fr. Seyerl: Contributions to the Swine Erysipelas Problem. Tierärztl. Umschau, (Feb.,* 1949) :29-33.]—F. A. Todd.

Hemolytic Disease of Newborn Dogs

Observations are cited to establish a diagnosis of hemolytic disease of varying severity in 4 puppies with erythrocytes containing a factor present in the red cells of their sire, but lacking in the red cells of their dam. Colostrum from the dam produced a recognizable degree of anemia in 2 of 4 puppies, and icterus in 1 of them. Neither anemia nor icterus developed in 2 other puppies with the same type of blood (Do-positive), nor in puppies that were Do-negative.—[*Lawrence E. Young, Donald M. Ervin, Richard M. Christian, and R. Wendell Davis: Hemolytic Disease in Newborn Dogs Following Isoimmunization of the Dam by Transfusions, Science,* 109, (*June* 24, 1949) :630-631.]

Swine Erysipelas Vaccination

Active preventive vaccination against swine erysipelas has been used in Germany during the past sixty years. Deficiencies have remained, despite improvement of the vaccine and the technique. Two items have been especially troublesome: inefficient vaccination protection, and postvaccination erysipelas. The former is believed to result from use of cultures not possessing sufficient immunizing properties, rather than to immunogenic differences in the organism. The latter appears following use of live culture and of sterile vaccine, and no reason or explanation has been found.

A concentrated, but liquid, vaccine containing soluble immunizing substances has been developed and has given encouraging results on some 25,000 pigs. It is called Riem's erysipelas concentrated vaccine (RKS-vaccine), is injected twice (interval not specified), and, while completely harmless, it stimulates an immunity which is dependable for at least six months.—[*A. Maas: Contribution to the Protective Vaccination of Pigs Against Erysipelas Under Special Consideration of Experiences and Results in Vaccinations with Riem's Erysipelas Concentrated Vaccine of Traub. Berl. and Münch. Tierärztl. Wchnschr. (June,* 1949) :65-69]—R. J.

Vaginal Cell Changes During Estrus

A study of the cells of the vaginal mucosa shows that they reflect the condition of the internal reproductive organs. By studying the vaginal epithelium of the cow at all stages of the estrous cycle, research veterinarians have been able to chart changes and to count the numbers of cells of various types. It is possible, by using these quantitative methods, and within limits, to determine the condition of the internal reproductive organs by studying the epithelium of the vagina. This technique is helpful in establishing a diagnosis in questionable cases, and also in determining the effect of injections of hormones.—[*W. Hansel, S. A. Asdell, and S. J. Roberts: The Vaginal Smear of the Cow and Causes of its Variation. Am. J. Vet. Res.,* 10, (*July,* 1949) : 221-228.]

Immunity

The problem of immunity is far from being resolved. A great many aspects of the phenomenon are still quite obscure in spite of the massive output of literature upon it, says the author. How does an inactive or inert inoculum produce an effective immunity or resistance to one disease, while only an active or live inoculum will produce this effect in another disease? Why do some inoculations produce immunity for only a short time, while others last a lifetime? What effect does the method of inactivation, or the route of injection, have? How does the "interference phenomenon" affect immunization against viruses? How important are the genetic and environmental factors in immunity? Where do the parasites and the minerals fit into the picture? These and other questions are raised.

Individual facts about specific diseases, and methods of protection against them, have been developed. But there is no basis for generalizing on any disease or any phase of immunity.—[*Osman A. Zaki. Thesis for Ph. D. in the Faculty of Science, Fouad I University, Cairo, Egypt: Recent Developments in Immunity, More Particularly From the Standpoint of Veterinary Medicine, and With Es-*

pecial Reference to Egyptian Conditions. Vet. J., 104, (1948) :340-353; 359-383; 395-413.]

Rabies Vaccination in Portugal

In 1926, prior to the initiation of a dog-vaccination program, 4,600 persons underwent Pasteur antirabies treatment in Portugal as compared with 350 in a later year (1934) when vaccination was widely practiced. Laxity in carrying out the vaccination program brought an upswing in the number of canine cases in the late 1930's, and a new vaccination drive was launched. By 1945, the number of reported canine cases had dropped to 7 In 1946, a comparably small number of cases were recorded, most of them in stray dogs near the Spanish border.—[*F. P. de Mello: La Rage au Portugal (Rabies in Portugal). Bull. Off. Internat. Epiz., Oct.*, 1946:100-103. *Abst., Vet. Bull.*, 19, (*Jan.*, 1949) : 13.]

BOOKS AND REPORTS

Physiology in Diseases of the Heart and Lungs

This monograph was written for third- and fourth-year students of the Harvard Medical School and for teachers in the various branches of the curriculum. The declared purpose was to overcome "the insecurity and bewilderment" of that period of a medical education. It is No. 10 of Harvard monographs in medicine and public health. The contents were approved by an editorial committee of five members.

In the light of our meager knowledge of cardiopulmonary pathology as a separate study, any attempt to write an intelligent criticism of this book is hopeless, since the text of the subjects treated reaches far beyond the teaching of the animal physiologists of our day. In fact, the acquired and congenital derangements of the heart-lung mechanism of domestic animals is an unwritten chapter. Yet, pondering the author's themes is actually exciting. Assuredly, it will make the careful reader wonder how much and what veterinary medicine has lost by having remained contented with the limited knowledge we possess on the coöperation of the two vital organs concerned —the heart and the lungs in health and disease. To what extent acquired or inherited blemishes of these organs account for the individual physique and utility of farm animals is truly worthy of attention, *per se*. Toilsome as the reading and interpreting of this monograph may seem in respect to the application of its teaching to the animal clinic, the fact remains that seekers of advanced knowledge on the subject and teachers of animal physiology and pathology should be deeply impressed. It most certainly establishes a new frontier for those two branches of the veterinary course, since so complete a review of available physiologic studies in diseases of the heart and lungs of man should be a new point of departure to advanced knowledge of them in animals.

Each of the book's 11 parts is divided into titled sections, in the interest of coherence, and is terminated with an extensive bibliography of value to medical students, teachers, and specialists in that field.

Besides being a scientific gem, the book as a whole is a clear reminder that the capacity of the right heart to shunt blood to the lungs and, in turn, their capacity to load the blood cells with oxygen for systemic distribution by the left heart have quantitative and qualitative variations, and that the whole must now be set apart for study as to its influence on somatic well-being. Except for Fallot's syndrome (patent ductus arteriosus), the amount of blood going to and from the lungs is equal. On the other hand, the quality varies in disease and in the causation of symptoms in chronic, as well as in acute, pulmonary troubles. Here, anoxia is the dominant result.

By accepting only proved facts and discarding the many conflicting ones, the author greatly enriches the sum of knowledge on heart-lung disorders. For teachers, students, pathologists, and clinicians who wish to dig deeper into the common level, this book ought to be a jewel.—[*Physiology in Diseases of the Heart and Lungs. By M. D. Altschule. 386 pages. Harvard University Press, Cambridge, Mass.* 1949.]

Unitarian Medical Commissions

The Unitarian Service Committee, in coöperation with the World Health Organization, has sponsored medical missions to several countries devastated by war. Each mission consists of an executive group of two or three, and a teaching staff of 10 to 15 which conducted conferences and symposiums, delivered lectures to medical and lay groups, made ward rounds and observed operations, and showed educational films. Reports of the mission which visited Poland and Finland, and the one which visited Greece and Italy have been printed.—[*Medical Mission to Poland and Finland. By Erwin Kohn, M.D. and Medical Mission to Greece and Italy. By Paul D. White, M.D. Paper. 85 pages each. Unitarian Service Committee, Inc., 9 Park St., Boston 8, Mass.* 1949.]

Health of Animals Division of Canada

The annual report of the Health of Animals Division for the year ending March 31, 1948, by Veterinary Director General Childs is an account of the continued good health and security of Canadian livestock. There were no cases of anthrax, glanders, dourine, hog cholera, foot-and-mouth disease, sheep scabies, nor angitis, and no rabies except in sledge dogs and foxes of the far Northwest, which was kept isolated by the vigilance of the mounted police. Except for six outbreaks of avian pneumoencephalitis (Newcastle disease) in

Ontario, there were no visitations of exotic plagues (rinderpest, bovine contagious pleuropneumonia). The five scattered outbreaks of cattle mange (New Brunswick, Ontario, Manitoba, Alberta) testify to the degree of control maintained. The marvel of these annual reports is the successful suppression of hog cholera in the face of a continuous stream of exchanges (persons, merchandise) with the swine belt of the U.S.A., and the expanse of territory involved.

Of the slaughtered animals, professionally inspected and condemned, 31.12 per cent were tuberculous cattle and 15.73 per cent tuberculous hogs.—[*Report of the Veterinary Director General, Department of Agriculture, Canada. By T. Childs, V. S., D. V. M. 50 pages. Details tabulated. Public Document. Edmond Cloutier, Ottawa,* 1949.]

Ohio Proceedings

This yearbook of 1949 contains the complete proceedings of the sixty-fifth annual meeting held on Jan. 5-7, 1949: reports of officers and committees, minutes of the business meetings, and complete manuscripts of all talks presented. In addition, it contains a complete roster of officers and committee members, a directory of all graduate and legally qualified veterinarians in the state, with supplementary lists of BAI veterinarians, and other interesting information on presidents and secretaries of former years.

In contrast with the preceding yearbook, this one has been carefully edited and shows a vast improvement in this respect. This improvement illustrates the results which may be achieved by observing some of the basic rules of editing and publishing. We commend the secretary and editor upon the excellence of his report, and suggest that other secretaries faced with the problem of publishing a proceedings issue refer to it as a guide.—[*Proceedings of the Ohio State Veterinary Medical Association. Paper.* 197 *pages.* 1949.]

Pennsylvania Proceedings

The Proceedings of the Sixty-sixth Annual Convention of the Pennsylvania State Veterinary Medical Association, Oct. 27-29, 1949, carries a complete transcript of the business meetings, together with reports of committees and all of the scientific papers presented at the meeting.

In his opening address, President H. A. Milo, Pittsburgh, listed two reasons for the increasing pressure for use of lay technicians in brucellosis- and tuberculosis-eradication programs: (1) There is an increasing tendency for recent graduates to limit themselves to small animal practice; and (2) there is considerable reluctance on the part of a number of veterinarians to assist in federal and state brucellosis- and tuberculosis-eradication programs.—[*Proceedings 66th Annual Convention Pennsylvania State Veterinary Medical Association, October 27-29,* 1948. *Paper.* 136 *pages. Offset print.* 1949.]

Dog Keeping and Training

The items a dog owner should know in order to meet the situations which dog-owning raises, are covered in this 16-page booklet.

The good manners which transform a dog from a nuisance to an ideal companion are described in a companion booklet of 16 pages. Upon learning all of the basic manners, and demonstrating them to a responsible person (scout leader, teacher), the degree C. C. (Courteous Canine) is conferred upon the dog, and a certificate bearing his name is issued to the owner.—[*The ABC's of Dog Keeping and What Every House Dog Should Know. Paper.* 16 *pages each. Gaines Dog Research Center,* 250 *Park Ave., New York* 17, *N. Y.* 1949.]

Doctor and Patient and the Law

The author is both a physician and an attorney, and his book presents a full discussion of malpractice and the legal problems inherent in, or growing out of, the relationship of physician and patient; of dentist and patient; and of nurse and patient. The history of the past three decades shows that the incidence of claims rises during economic depression.

This book presents and documents incontestable proof that the professional groups can conduct themselves and their affairs in such a way that the bringing of unjustified malpractice actions will become unprofitable. However, in respect to cases of actual malpractice the professional groups must recognize certain fundamental truths.

"Malpractice Vulnerability" is the title of chapter 15. It lists a series of questions for a self-test on this subject. The questions are searching ones, and many a veterinary practitioner who answers them will gain information regarding methods by which he can safeguard and protect his practice and his professional standing.—[*Doctor and Patient and the Law. By L. J. Regan, M.D., LL.B. Cloth.* 545 *pages. The C. V. Mosby Company, St. Louis, Mo.* 1949. *Price* $10.00].

Foot-and-Mouth Disease Report

This second partial report of a California senate interim committee on livestock diseases records the developments in the Mexican campaign to eradicate foot-and-mouth disease, the biggest disease-control program ever attempted.

The report is essentially a listing of the several periodic releases from the Bureau of Animal Industry, USDA, and other sources detailing the progress of the campaign. These have been reviewed in the JOURNAL of the AVMA, as released. In addition to these items, the report contains a section on the status of Swan Island as a possible quarantine station.—[*Report on Foot-and-Mouth Disease, Second Partial Report of Senate Interim Committee on Livestock Diseases. Published by the Senate of the State of California. Paper.* 202 *pages. May,* 1949.]

THE NEWS

European Tour Highlights
14th International Veterinary Congress

A "Postview" of the Tour

The AVMA tour (conducted by Thomas Cook & Sons) of the European countries this last summer was very successful. The 14th International Veterinary Congress in London was the purpose of the tour, yet for many it was also a sight-seeing tour of the countries west of the Iron Curtain. All were keen to see whatever was to be seen in Europe.

Forty-one persons embarked on the "Queen Elizabeth" from New York on July 15—a very hot day. Two joined the tour at Stockholm; others joined at various places and left at certain points before the tour was completed. After Paris, about half of the group turned homeward by boat; the other half spent a week in Switzerland, returning home by air via Paris. A number of other American veterinarians who were not members of the official party attended the Congress in London.

The tour party was a congenial one. Within a short time, all were being addressed by their first names and there was a great deal of fun and few short tempers. Veterinary schools and other institutions were visited by all, and many other veterinary institutions and some private practitioners were visited by smaller groups when an opportunity was afforded. The veterinary schools at Copenhagen, Stockholm, Oslo, Edinburgh, Brussels, and Paris (Alfort) were visited. Most of the men visited the London school during the week of the Congress. Greetings were cordial everywhere. Luncheons were arranged by the faculties in Oslo, Edinburgh, and Alfort. A reception was tendered the group by the French National Veterinary Association in their headquarters in Paris.

The Congress (Aug. 8-13, 1949) was successful both in attendance and in the quality of its program. Representatives were present from 53 countries, and these included many well-known men in the veterinary field. Our English colleagues did an excellent job of entertainment, in spite of the austere conditions which prevail there now. Incidentally, at no point on the tour was there any lack of food. At most places, more was available than the welfare of persons past 40 demands. All countries visited were making tourists, especially those with American dollars, more than welcome. We gathered the impression that tourists were being housed and fed considerably better than the native population.

Nearly everyone had cameras, the 36-mm. Kodachrome type predominating. Documentary evidence of the trip is, therefore, in the hands of most of those who made the journey. A reunion of the group has been projected at the time of the AVMA annual meeting next summer, Dr. Carl Schlotthauer having been elected in Paris to make the arrangements. There should be thousands of Kodachrome slides and 25 or 30 movie films available for entertainment.

As high points of the trip, I would select the final week in Switzerland, the two days in Amsterdam, and the journey across the mountains and down the Hardanger Fjord of Norway, but it was all good and all memorable. Most of us would like to regard this as a survey trip and would enjoy spending more time in many of the places visited.

The ladies of the party were entertained by the shops of the various countries. Many things were offered for sale and a considerable number of European novelties were brought back. In one day, a single shop in Lucerne sold at least 16 watches to members of the party.

In general, the hotel accommodations were good, the meals were wholly satisfactory, and traveling conditions as good as were available. Several of the train trips were a little hot and not too clean, but everyone accepted these cheerfully and made a pleasure out of a trip which, taken alone, would not have been listed as such.

Most of the European countries show evidence of recovering from the last war but many are still laboring under difficult conditions. Most of our European colleagues are not particularly optimistic about the future, but they are hard at work trying to make the best of a situation which is not too pleasant.—*Dean W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y.*

Scandinavia and Other Countries

It was a great day for the Nordens when, on the 6th of July, we steamed out of New York harbor on the famous peace ship, "Gripsholm," realizing at long last, after many years of hoping and planning, the dream of going back to my birthplace in northern Sweden, and a visit to Europe.

The crossing was placid and delightful, with sunshine practically all the way. We passed through the narrow channel between the wind-swept northern tip of Scotland and the bleak

Orkney Islands through Scapa Flow, famous in World War I. The weather was clear so we could readily see the treeless, rugged landscape on both sides—level grazing country, with stone fences and dotted with low stone houses on the south, rocky and seemingly uninhabited hills on the north surrounding Scapa Flow, in which a few wrecks of the scuttled German fleet were visible.

Captain Erickson of the "Gripsholm" is a Rotarian, and a Rotary Club meeting held on board ship was truly an international affair, with members from Sweden, Denmark, Norway, the United States, and Canada attending.

Arriving at Gothenburg, we took an all-electric, fast express diagonally across Sweden to Hudiksvall on the Baltic coast, and inland for a short distance to Bjuraker. There, the sun shone brightly at three o'clock in the morning, 62 degrees latitude, which is as close as we came to the midnight sun.

On Sunday, we attended services at our old church, rather famous in that part of the country because of its age—1765 on its cornerstone. No church steeples were built in those days. Instead, bells were mounted in separate "bell towers" made of wood, simulating the old Viking stave churches in Norway.

The services were followed with a wedding. The young bride's veil was held in place by the smallest of three beautifully made, silver-spangled, jewel-studded golden crowns, the historic property of this church. The church was decorated with birch foliage, customary in that country.

In Stockholm, the "Venice of the North," at the beautiful Grand Hotel, we joined the 42-member AVMA tour under the efficient management of Mr. Frank W. Staff of Thomas W. Cook & Son, and the experienced leadership of Dr. D. M. Campbell of Chicago. Unfortunately, only one day was available to spend in Stockholm. A couple of hours was spent at the Veterinary College where we were greeted by Professor Nils Lägerlof. They have some fine new buildings and equipment, including a recently completed, very modern pathologic and bacteriologic laboratory directed by Professor Hjärre.

Then with the group, we continued on the conducted tour to Oslo, across the mountainous snow and glacier area, via Finse, down the famous Hardanger Fjord to Bergen, across the North Sea by boat to Newcastle, then to Edinburgh, through the lake and druid districts in northern England, and along the "backbone" of England to London.

The highlight at Oslo was visiting the Veterinary High School, including a sumptuous smorgasbord luncheon at which the official hosts were Professor and Mrs. Lars Slagsvold, and Professor and Mrs. H. F. Wirsted. We also visited the famous Vigelund statuary, the old Viking stave church and, of course, the famous ancient Viking ships.

In Edinburgh, we were entertained at the Royal (Dick) Veterinary College at a fine dinner presided over by Dean and Mrs. Wm. Mitchell, assisted by Professor and Mrs. Alex Robertson and other faculty members.

The International Veterinary Congress in London was a grand success, and the hosts are certainly to be congratulated on their splendid work in handling the affair. Good fellowship and the spirit of friendly happiness prevailed among the representatives of 53 nations, with a total of 1,421 veterinarians in attendance. The official languages used in presentation of the subjects and in discussions were English, French, and German. Russia declined to participate. The theme of the Congress, the "World Food Supply," emphasized the contribution of immense importance the veterinary profession has made, and is making, in the control and eradication of infectious livestock diseases and diseases of animals communicable to man. The largest delegation was from the United Kingdom, the Scandinavian countries second, The Netherlands third, and the United States fourth.

In Alfort, at the veterinary college, the group was entertained at an elaborate banquet by the faculty in their new veterinary student dormitory, and in Paris, the tour was concluded with a delightful "Champagne" hour at the headquarters of the French National Veterinary Association, with the president, Dr. M. Quentin, and associates as hosts.

Although the countries we visited are still hard up, they are rapidly coming back, and it was definitely noticed that the veterinary profession is at the top. The need for veterinarians and veterinary services seemed high, and in some places a definite shortage exists. The schools visited are operating to capacity, most of them in older buildings but several are planning remodeling and additional buildings, and some quite extensively. The Scandinavian countries are well situated in this respect. Even Oslo had some new buildings. In the field of veterinary activities—educational, regulatory, livestock disease control, large and small animal, general practice—the United States excels all other countries.

But to us, on arrival in the busy New York harbor, the greatest inspirational sight is the glorious Statue of Liberty, with the New York skyline background—the envy of millions, and the hope of the world.—*Dr. Carl J. Norden, Norden Laboratories, Lincoln, Neb.*

A Look at Italy

Traveling via Milan, we found the beautiful Italian Alps, the Apennines, and the historical places within many Italian cities and coutrysides of interest. In Venice, we visited the Doge's Palace, the Bridge of Sighs, and St. Mark's Cathedral and Square. Venice is the city of

waterways and bridges, with gondolas and/or motor boats as the sole methods of transportation. In Florence, we saw the Medici Chapels, the Cathedral, the Baptistery, Giotto Tower, and other points of interest. In Rome, we saw the Vatican, the Cathedral and tomb of St. Peter, the Cathedral and tomb of St. Paul located just outside the old city of Rome, and the Catacombs of the early Christians.

From Rome to Naples, the new, and part of the old, Appenine Highway traverses sections of ancient cities, their walls and bridges of stone construction, built long before the time of Christ. Strangely enough, many of these ancient structures are still occupied. Naples also has many historical sites of this early period in civilization, including the buried city of Pompeii.

Much building is going on throughout Italy. Replacement of railway centers is well underway. Many of the terminals were completely destroyed and are now replaced with railway stations of modernistic design.

Italy's agriculture, horticulture, and industry seemed active. Veterinary science is principally under government control in a livestock industry not too highly developed.

We sailed some 300 miles south of our course to avoid an Atlantic typhoon, after which the Statue of Liberty in New York Harbor was a most welcome sight.

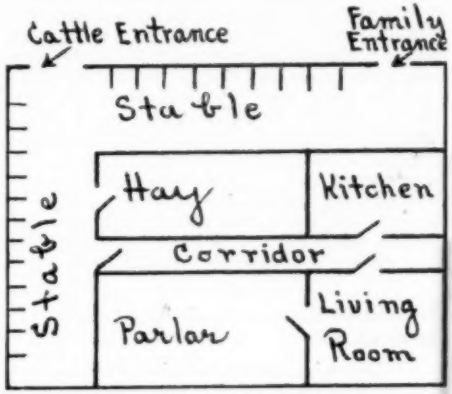
In all, the AVMA tour was a most valuable experience for all who made the trip. We will have many interesting and happy hours of reminiscences.—*Dr. Anthony E. Bott, Belleville, Ill.*

ENGLISH AND DUTCH FARMS

Before leaving the States, I was given a letter of introduction to Colonel T. M. Ker, the secretary of the English Guernsey Society, and upon our arrival he made arrangements for trips to Bottom farm in Hampshire and Harekatch and Merrell farms in Reading. We were met at the stations by the agents or owners and were shown their cattle and lands. These English Guernsey folk, most friendly and hospitable, served us the best food we had in England.

Some of the interesting things I noted on these farms were: the storage and use as pasture dressing of all liquid manure; their excellent permanent pastures—some are put down for twenty to twenty-five years or more; their emphasis on herd milk production average rather than individual records; their practice of year round exercise of bulls by tethering on long chains; and the use of the best possible roughage and less concentrates. They were, however, bewailing the fact that they did not have more of the latter, but I told them they might do well to continue their present practice of excellent pastures and good roughage. Their pastures were double-fenced and water was pumped to their cattle to avoid tuberculosis infection on neighboring farms.

In Holland, I learned that cows can be housed under the same roof with the family in fine fashion. During the summer, when the cattle are out to pasture night and day, the stables are scrubbed, white curtains are hung at the windows, and the housewife stores food in the clean, cool stable. The living quarters are separated from the Holstein-Friesians by a corridor that runs through the building. Many Dutch dairymen, when milking time arrives, go to the milk house, toss their milking utensils into a boat at the back door, and scull or row to the pasture to milk their cows. A rough diagram of the stable and living quarters on one farm I visited shows the general plan. The Dutch farmer takes off his field wooden shoes when he enters the stable; and his stable wooden shoes are removed before he enters the kitchen or else—"Ma" may say plenty.—*Dr. David Hopkins, Brattleboro, Vt.*



General plan of Dutch farmhouse.

DENMARK, HOLLAND, AND ISRAEL

Of all of the countries that we visited on the AVMA tour, Mrs. Goldhaft and I enjoyed Denmark most, with Holland a close second. The people in Denmark and Holland are all working hard and their interest in the soil and in their livestock will, I am certain, bear fruit in the very near future.

In addition, Holland is not only making rapid progress in its agricultural and livestock interests but is engaged in many research projects. It would appear that Holland will make valuable contributions in this direction in the near future.

Switzerland and Sweden are affluent, in excellent financial condition, and the food and sanitary conditions in these two countries were excellent as compared with some of the other lands we visited. Sanitary conditions in these other countries we visited can not compare with the excellent sanitary conditions in America.

In all the sections of the Continent we visited,

the poultry industry has been sadly neglected. True, in many cases they could not help themselves. Denmark, alone, showed any evidence of a comeback in commercial egg and poultry meat production.

We left the group in Switzerland on September 1, and proceeded to Israel on September 3. Here we had an excellent opportunity to make a survey of the livestock interests of this new state. The poultry industry of Israel is growing by leaps and bounds. There has been a great deal of pedigree-mating and progeny-testing in this region for the past five years and with excellent results. The poultry industry is organized on the American plan. Generally, the poultry husbandry and poultry breeding are planned along American lines. The sheep, goat, and cattle industries are in their infancy, but plans have been made to develop them so that they will fit into the scheme of the basic economy of Israel.—*Dr. Arthur D. Goldhaft, Vineland Poultry Laboratories, Vineland, N. J.*

Practitioner Participation in Brucellosis Eradication

The following recommendations of the AVMA Special Committee on Practitioner Participation in Brucellosis Control are the result of the meeting of that committee in Columbus, Ohio, Oct. 10, 1949.

1) The services of the practicing veterinarian are essential for a complete brucellosis-eradication program. Furthermore, these services can be furnished most economically and effectively by the local veterinarian. Where provisions are made to pay practitioners on a per farm and per head basis, there is even more extensive participation by both the herd owners and their veterinarians. Therefore, it is imperative, and this committee strongly recommends, that provision be made to pay practicing veterinarians for brucellosis-eradication services on a per farm and per head basis, so that brucellosis can be eradicated as economically and as expeditiously as possible.

2) The plans for brucellosis eradication, listed as plans A, B, C, and D, in the report of the Committee on Brucellosis of the United States Livestock Sanitary Association, adopted in Chicago in 1947 and the amendments adopted at Denver in 1948, and approved by the Bureau of Animal Industry, have the endorsement of the majority of practicing veterinarians. However, the legislative and educational portions of the report of the Brucellosis Committee of the U.S.L.S.A. do not have unanimous approval, and the following amendments to these portions of the report are essential for enlisting the active support of practicing veterinarians:

a) Amendments should be adopted which will place more emphasis on the participation of the practitioner in the formulation and administration of the program.

b) The program and administrative details for each state should be developed by the state livestock sanitary official and the federal veterinarian in charge, *in coöperation* with representatives of the state veterinary medical association and the livestock industry in that state.

c) The program developed by each state should provide sufficient flexibility for the work to be accomplished by having practitioners assigned to a specific territory, or by allowing the herd owners to choose the veterinarian to do their work, or by a combination of these plans.

d) There should be adequate provision for the development of complete coöperation with farm and livestock organizations, the local extension service, local health departments, and/or local governing bodies. These agencies can assist in the circularizing of herd owners, mailing of cards, and other administrative details.

e) Every effort must be made to reduce the number of forms and copies of reports required. Methods for making duplicates should be thoroughly investigated and practical procedures adopted by agencies requiring them.

f) Undoubtedly, the program must be supervised by full-time employed state or federal veterinarians; however, we seriously doubt the wisdom of requiring practicing veterinarians to work under the supervision of county or municipal veterinarians.

g) Practitioners should be included in all educational programs for herd owners. This will make the educational programs more effective.

3) This committee recommends that the Bureau of Animal Industry and the state agencies take no further action directed toward the use of lay technicians for brucellosis control until an opportunity has been given to all practicing veterinarians to participate in a program which embodies the recommendations of, and is designed to obtain the coöperation of, practitioners. Until such a program is developed, it will be hazardous to the best interests of the livestock industry and public health to follow a policy which embodies the wholesale use of lay technicians. This is true, because such laymen are only partly trained and are capable of performing only some of the duties essential for a complete eradication program.

4) We further recommend that when the recommendations of this committee are adopted, that the American Veterinary Medical Association make every effort to inform practictioners of the need for their participation in, and active support of, brucellosis-eradication programs.

Respectfully submitted,

s/A. M. ORUM, *Chairman*, Illinois

JOHN K. DEWAR, Iowa — C. E. DEE, Florida

O. H. STALHEIM, South Dakota — P. G. MACKINTOSH, Washington

J. L. MCAULIFF, New York

First Meeting, Division of Veterinary Medicine, Association of Land-Grant Colleges

At the sixty-third annual convention of the Association of Land-Grant Colleges and Universities on Oct. 24, 1949, at Kansas City, Mo., the first program session of the new Division of Veterinary Medicine was called to order by the chairman, Dean W. A. Hagan. Officers of the Association of the Deans of the American Colleges of Veterinary Medicine who served as officers of the Division during the past year were Drs. W. A. Hagan, chairman; H. D. Bergman, vice-chairman and member of the executive committee; and C. S. Bryan, secretary. These men also served as members of the senate during the first year.

At the business meeting it was suggested that delegates consider the development of educational exhibits, suitable for use at professional and nonprofessional meetings, by their respective schools and departments of veterinary medicine; and that, if possible, the state livestock sanitary officials be represented when animal disease programs are discussed by the Division.

Action was taken to form a committee to consider the relation of the extension service to the veterinary practitioner.

The following divisional executive committee was elected: Dean W. A. Hagan, three years; Dean H. D. Bergman and Dr. C. R. Donham (Purdue University) two years; Dr. C. S. Bryan and F. E. Hull (University of Kentucky), one year. All future elections are to be for three years. Deans Bergman, Bryan, and Hagan were elected to the senate. Of these, Dean Hagan was elected the Division representative on the Association executive committee for one year only. The term of one year was set on motion by Dean E. E. Leasure, which was seconded and passed.

The following resolution was approved by the executive committee and senate of the Association.

RESOLVED, That the Division of Veterinary Medicine of the Association of Land-Grant Colleges and Universities hereby petitions the executive committee and the senate to use the influence of the Association to obtain the inclusion of veterinary medicine in any similar bill (S. 1453, Emergency Professional Health Training Act of 1949) presented to the new Congress, which has for its purpose the grants-in-aid contained in the bill previously mentioned.

s/W. A. HAGAN, H. D. BERGMAN, C. S. BRYAN,
Executive Committee of the Division.

Officers elected for the ensuing year are: Deans H. D. Bergman, chairman; W. A. Hagan, vice-chairman; and C. S. Bryan, secretary. The chairman was empowered to appoint the committees authorized by the Division.

The following program was presented by the Division.

Dean Lyman Jackson, Philadelphia, Pa.: "Organization and Operation of the Association of Land-Grant Colleges and Universities."

Messrs. W. A. Owens and L. C. Payne, Ames, Iowa: "Aptitude and Achievement Tests in the Selection of Veterinary Students."

Mr. W. R. Kirner, director, Chemical-Biological Coördination Center, National Research Council,

Student Enrollment for the Academic Year 1949-1950

Approved Schools	Fresh.	Soph.	Jun.	Sen.	Spec.	Grad.*	Total	1948	Change
Alabama Polytechnic Institute	71	64	60	66	0	3	264	260	+ 4
Colorado A. & M. College	60	61	61	64	0	1	247	227	+ 20
Iowa State College	65	67	67	67	0	12	278	273	+ 5
Kansas State College	65	71	70	71	0	1	278	273	+ 5
Michigan State College	63	69	86	67	0	33	318	286	+ 32
New York State Veterinary College	50	49	46	50	1	11	217	186	+ 31
Ohio State University	70	71	73	74	0	15	303	286	+ 17
Ontario Veterinary College	89	104	113	127	0	0	433	494	— 61
Pennsylvania, University of	52	42	42	44	0	6	186	169	+ 17
Quebec Veterinary School	28	27	12	15	3	0	85	73	+ 12
Texas A. & M. College	54	60	65	64	0	1	244	279	— 35
Tuskegee Normal and Industrial Institute	5	6	12	16	0	0	39	48	— 9
Washington, State College of	45	48	45	41	0	3	182	186	— 4
Totals	717	739	752	766	4	86	3,074	3,040	+ 34
New Schools									
California, University of	52	42	0	0	1	1	96	42	+ 54
Georgia, University of	51	50	53	45	1	0	200	153	+ 47
Illinois, University of	24	24	0	0	8	9	65	24	+ 41
Minnesota, University of	50	49	23	0	5	16	143	74	+ 69
Missouri, University of	30	30	30	26	0	2	118	88	+ 30
Oklahoma A. & M. College	34	34	26	0	0	0	94	68	+ 26
Totals	241	229	132	71	15	28	716	449	+267
Totals (approved and new schools	958	968	884	837	19	114	3,790	3,489	+301

*Hold degree in veterinary medicine, working on advanced degree.

Washington, D. C.: "Chemical-Biological Coordination."

Mr. R. C. Newton, Swift & Company, chairman, Agricultural Board, National Research Council: "The Relationship of Animal Agriculture to Human Nutrition."

Dr. C. R. Donham, West Lafayette, Ind.: "Extension Service to Veterinary Practitioners."

Mr. C. B. Hutchison, Davis, Calif., chairman of the Division of Agriculture and past president of the Association: "Welcome to the New Division of Veterinary Medicine."

Mr. P. V. Cardon, administrator, Agricultural Research Administration, USDA: "Agricultural Research as an Institutional Function."

Mr. Stanley Andrews, director, Office of Foreign Agricultural Relations, USDA: "Developments in Europe and Their Implications for American Agriculture."

s/C. S. BRYAN, *Secretary.*

Dr. Kaplan Appointed to WHO

Dr. Martin M. Kaplan has been appointed to the staff of the World Health Organization of the United Nations, Palais des Nations, Geneva, Switzerand. He will be in the Division of Epidemiology and will be responsible for all matters of veterinary public health interest to WHO.

Since 1945, Dr. Kaplan has spent most of his time in Europe and the Middle East, first with UNRRA and subsequently with FAO. His assignments have taken him to nearly all European and Mediterranean countries, where he has acted as the United Nations veterinary consultant.

Dr. Martin M. Kaplan

Dr. Kaplan was graduated from the University of Pennsylvania School of Veterinary Medicine in 1940, and received his Master of Public Health degree from the same University in 1942.

Correction—Executive Secretary's Report

In the annual report of the Executive Secretary (*see* the October JOURNAL, pp. 288-292), the names of several deceased members were inadvertently omitted and should be added to the list of those whose deaths had been reported during the year. They are:

BAKER, G. G.	SPONG, L. E.
BUTLER, W. J.	STAFFORD, W. B., JR.
CRENSHAW, E. R.	TREMAN, H. B.
DICK, G. A.	VERMILYA, R. F.

Correction of Committee Reports

The following corrections should be noted in reports as published in the November JOURNAL.

Special Committee on History (p. 421).—Delete the third recommendation in the summary of the report. The Executive Board felt that approval could not be given at this time for the committee to employ full-time help for research and editing and recommended that this item be deleted. The House of Representatives approved the Board's recommendation and accepted the report with the deletion.

Special Committee on Code of Ethics (pp. 429-430).—Delete the first 15 lines of the third paragraph on page 430 down to the end of the sentence ending with the words "and their members." The discussion of this report and the deletion which was accepted by the House of Representatives will be found in the Proceedings of the Detroit session, October JOURNAL, pp. 313-317.

Civilian Veterinarian Wanted for Occupation Forces in Japan

The Civilian Personnel Division, Department of the Army, is in urgent need of a veterinarian with public health experience to serve in a civilian capacity for a two-year minimum period in the Far East Command in Yokohama, Japan. The position offers opportunity for broad experience, since the duties include the development of an effective civilian veterinary program to establish a normal veterinary service, including meat and milk inspection, animal disease control, and prevention of diseases transmissible to animals and man.

The position pays $6,235.20 per annum plus a 10 per cent Post differential, with quarters provided at no cost to the employee. Dependents may join the employee in about eight to twelve months, where quarters for a family are needed; if only a dependent wife is involved, she may follow in about three to four months if willing to share the husband's hotel room until quarters become available. Transportation is paid to and from the command for an employee and/or his dependents.

The minimum acceptable qualifications

are a degree from a recognized veterinary college, plus four years of professional experience.

Interested qualified applicants should make application on Civil Service Commission Standard Form 57, obtainable from any Class A post office, to any of the four following offices of the Secretary of the Army:

Office, Secretary of the Army
Civilian Personnel Division
Overseas Affairs Branch
Washington 25, D.C.

Mr. E. J. Henning, Representative
Office, Secretary of the Army
Overseas Affairs Branch
Sixth Floor, 139 Centre St.
New York 13, N. Y.

Mr. John H. Plattenberg, Representative
Office, Secretary of the Army
Overseas Affairs Branch
Room 149, 1660 East Hyde Park Blvd.
Chicago 15, Ill.

Mr. Robert C. Cross, Jr., Representative
Office, Secretary of the Army
Overseas Affairs Branch
74 New Montgomery St.
San Francisco 5, Calif.

STUDENT CHAPTER ACTIVITIES

Pennsylvania Chapter.—The University of Pennsylvania Student Chapter of the AVMA opened its 1949-1950 activities with the annual smoker to welcome the 52 members of the freshman class. Dean Raymond A. Kelser spoke briefly on the merits of the AVMA, and President Biscotte introduced the faculty members who were present, including Dr. Donald G. Lee, faculty advisor. The remainder of the evening was spent informally in just getting acquainted.

The first of the formal meetings of the Chapter, scheduled for the second and fourth Wednesday of each month of the school year, was held October 12. Two sound films, "Blue Bloods," dealing with purebred horses, and "Kennel Kings," showing scenes at the famous Morris and Essex dog show at Madison, N. J., were shown.

President-Elect Sherman Ames then introduced Dr. Gordon Danks, professor and head of the Department of Animal Industry, who spoke on the various veterinary schools throughout the country.

The Chapter has started the season with increased enthusiasm and the desire to make their chapter one of the most active in the country.

S/RICHARD S. MACKENSEN, *Secretary.*

WOMEN'S AUXILIARY

AVMA European Tour.—The fourteenth International Veterinary Congress stands as an experience of singular importance to me. Making the trip in company with veterinarians and their wives, from all sections of our country, was a privilege. Meeting men and women from all parts of the world who had a common interest climaxed the experience.

I was amazed to find a great number of women attending the Congress. They were interested to know more about the Auxiliary to the AVMA (many have followed the organization through the women's page in the JOURNAL), and to see how such a plan might be worked out in their countries. However, there are auxiliaries functioning in some of the other countries. The women attending the Congress seemed to have one common interest—they all recognized a world hungry for good food and hungry for peace. They agreed with Lord Boyd Orr when he said in his opening speech at the Congress, "Veterinary medicine has made great strides in the past twenty-five years, and it can break down the barriers of a hungry world. Knowledge of veterinary medicine should be an international passport."

Many women attending the meeting were eager to be a part of a universal plan to circle the world as one more step toward making the world more secure for better living.—*Mrs. Anthony E. Bott, Belleville, Ill.*

In the old city of Geneva, we were led around the grounds of the United Nations building by a strutting peacock. The trip by steamer down Lake Geneva was a series of colorful pictures. The doll-like villages of white stone and red tile nestled on the mountainside or crept to the lakeside in shiny cleanliness. The countryside looked like a park from its snowy peaks to the lake's edge. We disembarked at the Castle of Chillon, built in the ninth century to guard the St. Bernard Pass.

At Montreaux, the little village built on three levels, with its head in the mountains and its feet in the lake, we saw Rita Hayworth's hotel, the Grand Palace. The rooms in our hotel had wrought iron balconies overlooking the mountains and lake. We reveled in sunsets "out of this world." Little villages appeared and disappeared in the mists and, at evening the moon lighted the path of the little steamers plying up and down the lake. On the way to Interlaken, we saw many hotels perched on mountain tops, which we thought inaccessible until we saw the cog railroads and funniculars which go straight up. The tinkling of bells is part of that charming country—on the cattle, the horses, the children, and the clocks.

The train ride to the Jungfrau was one thrill after another, including an avalanche down the mountainside, but far away from us. From Interlaken, we drove in the rain to the Rhone Glacier, and the driver of the car literally had our lives in his hands, as he guided us over the narrow roads and hairpin curves, with sheer drops over the side.

In Lucerne, another city in a setting of mountains and water, a little old watchmaker led 13

Americans down the main street to a tiny jewelry store and, in no time at all, 13 Americans were the proud possessors of 13 Swiss watches.

Feeding the swans on the lake the last morning at breakfast, with the tame sparrows cleaning up the crumbs on table and floor, we carried away a picture of peace and tranquility "where your problems may not be solved but where they will be joyously forgotten."—*Mrs. T. O. Brandenburg, Bismarck, N. Dak.*

A tourist gets only a fleeting glimpse of the whole, yet that glance is so filled with interest that it is a challenge to explore and seek a better understanding of the world and its people, and the conditions under which they live. I feel a tour makes one a better world citizen.

The prettiest spot I saw on the tour is the country out of Amsterdam. Riding along a fine highway with canals, boats, and windmills alongside, we reached a fairyland of flowers growing in the open, with hothouses scattered about. Flower buyers attend the flower auctions held twice each week. Our party was allowed to enter the largest building, and I caught my breath as I gazed, as far as I could see, at the long tables holding bunches of cut flowers of every known hue. These cut blossoms and plants are auctioned off to the highest bidder, and are transported to all parts of the world by automobile, railroad, and airplane, and quickly too, as they are of course perishable. Each day, New York receives a plane of flowers within nine hours after they are purchased.

In other parts of the JOURNAL will be found descriptions of Norway and Sweden, Switzerland, Germany, and Italy, as well as Israel, where one member of the tour visited.—*Mrs. Frank Hecker, Houston, Texas.*

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Florida Auxiliary.—The George Washington Hotel, Jacksonville, was headquarters for the second annual meeting of the women's auxiliary to the Florida State Veterinary Medical Association. After the annual luncheon, served to 70 members and guests, Mrs. J. E. Scatterday, president, presided at the business meeting. Mrs. C. E. Bild, official delegate of the state auxiliary, third vice-president of the women's auxiliary to the AVMA, and secretary to the House of Representatives, gave a report of the Detroit meeting which created definite enthusiasm in planning for the coming year. Two educational projects were adopted to assist worthy students of veterinary medicine. One was a gift of $25 to the library of the School of Veterinary Science at the University of Georgia; the other was a cash gift to be awarded the student at Alabama Polytechnic Institute, Auburn, who finishes his first year in veterinary medicine with the highest grades at close of 1950 spring term. The Auxiliary also voted to publish a directory which will contain, in addition to membership listing, a copy of the constitution and by-laws. To date, there are 92 members.

Officers reëlected for the following year were: Mrs. J. E. Scatterday, Gainsville, president; Mrs. R. L. Brinkman, Live Oak, vice-president; and Mrs. V. L. Bruns, Williston, secretary.

In addition to a hospitality hour at the home of Dr. and Mrs. Peter S. Roy, and the annual banquet, the ladies enjoyed luncheon at the Jacksonville Naval Air Station and a four-hour cruise on the St. Johns River as guests of the U. S. Navy.

Mrs. Ronald T. Jackson, St. Augustine was publicity chairman and Mrs. S. T. Johnson, Jacksonville was chairman of the program committee.

s/(MRS. J. E.) NAOMI SCATTERDAY, *President.*

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Iowa Auxiliary.—The Women's Auxiliary to the Eastern Iowa Veterinary Association met in the Hotel Montrose, Cedar Rapids, on Oct. 20-21, 1949. They were entertained at a theater party, the annual banquet, travel talk, and a luncheon and style show.

s/MRS. T. D. TRAYNOR, *Chairman, Entertainment Committee.*

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Maine Auxiliary.—The Women's Auxiliary to the Maine Veterinary Medical Association met at Poland Spring House, Poland Spring, Oct. 18, 1949. A constitution was adopted and a nominating committee elected to present a slate of officers for an election to be held in January, 1950.

s/MRS. V. H. MILLER, *President, National Auxiliary.*

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Mississippi Valley Auxiliary.—The Women's Auxiliary to the Mississippi Valley Veterinary Medical Association held its twelfth annual meeting at the Hotel Pere Marquette on Nov. 2-3, 1949. After the business meeting, the ladies enjoyed a luncheon, style show and the annual banquet.

s/MRS. VICTOR B. BEAT, *Secretary.*

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Pennsylvania Auxiliary.—One-hundred members and guests, from seven nearby states, attended the luncheon meeting of the Women's Auxiliary to the Pennsylvania State Veterinary Medical Association, Oct. 5, 1949. After the reports of the secretary-treasurer, a letter was read from Dr. R. A. Kelser, dean of the School of Veterinary Medicine, acknowledging the annual gift of $25 to the senior student doing the most outstanding work in the large animal clinic.

Reports of the AVMA meeting in Detroit were given by Mrs. J. A. Muffly, Mrs. E. S. Stone, and Mrs. S. F. Scheidy.

A recommendation that all members of the national auxiliary should automatically become members of their state auxiliary was sent to the House of Representatives to be considered. A fur and fashion show followed the business meeting.

Officers of the auxiliary are Mrs. Howard H. Custis, Oxford, president; Mrs. Howard Milo,

Pittsburg, vice-president; and Mrs. John J. Thomas, Lemoyne, secretary, treasurer.

s/MRS. HOWARD H. CUSTIS, *President.*

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South Dakota Auxiliary.—Thirty-nine members and guests attended the luncheon and business meeting of the Women's Auxiliary to the South Dakota Veterinary Medical Association in Sioux Falls, Oct. 5-6, 1949. The following officers were elected: Mrs. O. H. Stalheim, Vermillion, president; Mrs. R. M. Scott, Sioux Falls, vice-president; Mrs. F. W. Nold, Madison, secretary-treasurer.

s/MRS. F. W. NOLD, *Secretary.*

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Washington Auxiliary Organized.—One of the high-lights of the annual meeting of the Washington State Veterinary Medical Association in Yakima, Sept. 30-Oct. 1, 1949, was the organization of a women's auxiliary to the Association. Officers of the new auxiliary are Mrs. Robert Phelps, Vancouver, president; Mrs. Wm. Menaul, Vancouver, vice-president; and Mrs. J. L. Ellis, Olympia, secretary-treasurer.

s/MRS. J. L. ELLIS, *Secretary.*

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West Virginia Auxiliary.—The Women's Auxiliary to the West Virginia Veterinary Medical Association met Oct. 10, 1949, at the home of Mrs. A. C. Thrash, Clarksburg. Nineteen members were present. Officers elected were Mrs. C. F. Hale, Beckley, president; Mrs. G. C. Borst, Huntington, vice-president; and Mrs. W. E. Trussell, Charles Town, secretary-treasurer.

s/MRS. W. E. TRUSSELL, *Secretary.*

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X.

NEW RULES AND NEW FORMS FOR MEMBERSHIP APPLICATIONS

Amendments to the Constitution and Administrative By-Laws were adopted at the 1948 annual meeting for the purpose of integrating membership in constituent associations (state, provincial, territorial, and other associations affiliated with the AVMA) with AVMA membership. These amendments necessitate a change in the vouchers required for indorsement of membership applications and in the printed application form. In effect, the new rules are as follows:

APPLICATIONS FROM VETERINARIANS RESIDING WHERE THERE IS A CONSTITUENT ASSOCIATION.—Such applications shall contain the certification of the secretary of the constituent association in the state, province, or territory that the applicant is a member in good standing of that association. This certification takes the place of the signatures of the two vouchers formerly required for indorsement of an applicant.

APPLICATIONS FROM VETERINARIANS RESIDING WHERE THERE IS NO CONSTITUENT ASSOCIATION.—Such applications shall contain the indorsement of two AVMA members who know the applicant, one or preferably both of whom reside in the same country as the applicant. This method applies to veterinarians residing outside the United States, Canada, Cuba, Puerto Rico, and Canal Zone.

APPLICANTS FROM JUNIOR CHAPTERS.—Junior members in good standing in their student chapters for not less than two years may be admitted without payment of the membership (initiation) fee, provided applications are filed within thirty days of graduation. Such applications must contain the indorsement of two members. To retain membership, such applicants must, within three years following graduation, join a constituent association, assuming that they are going to locate and reside where there is such an affiliated association. (A By-Law amendment to this effect was proposed at the 1949 annual meeting for action at 1950 session. In the meantime, applicants from junior chapters will continue to be admitted as formerly.)

New application forms have been printed containing the two types of certification described above and are available from the AVMA office. There are undoubtedly a number of the old forms still in circulation. Beginning with applications to be listed in the January, 1950, JOURNAL, the new method of certification will be put into effect.

First Listing

BYRD, EDGAR H.
Box 211, Francesville, Ind.
D.V.M., Ontario Veterinary College, 1910.
Voucher: W. W. Garverick.

CHAMBERS, JOHN W., JR.
Garland, Utah.
D.V.M., Kansas City Veterinary College, 1914.
Vouchers: H. W. Stevens and W. Binns.

FLAHERTY, ROBERT C.
Easton, Md.
V.M.D., University of Pennsylvania, 1947.
Vouchers: A. L. Brueckner and C. D. Van Houweling.

GRAY, JOHN S.
35 High St., Newton, N.J.
D.V.M., Ontario Veterinary College, 1924.
Vouchers: J. R. Porteus and C. D. Van Houweling.

HETHERINGTON, JOHN L.
403 S. College Ave., Bloomington, Ind.
D.V.M., Indiana Veterinary College, 1911.
Voucher: W W. Garverick.

JACOBY, SUSANNE
172 Orchard St., East Lansing, Mich.
D.V.M., University of Havana, 1948.
Vouchers: L. Calhoun and J. San Martin.

KETOVER, NORMAN
c/o Dr. J. B. Skelton, Box 2, Post Rd., Riverside, Conn.
D.V.M., École Vétérinaire d' Alfort, 1949.
Vouchers: J. B. Skelton and R. A. Rands.

KINSEY, BILL H.
Washington Pk., Washington, N. Car.
D.V.M., Alabama Polytechnic Institute, 1941.
Vouchers: J. H. Brown and C. D. Van Houweling.

MCDANIEL, JOHN S.
420 Rutherford Ave., Trenton 8, N.J.
D.V.S., Kansas City Veterinary College, 1909.
Vouchers: J. R. Porteus and C. D. Van Houweling.

MORGAN, SAMUEL S.
6603 Florida Ave., Tampa, Fla.
D.V.M., Kansas City Veterinary College, 1912.
Voucher: V. L. Bruns.

TALBERT, M. G.
250 E. Madison St., Franklin, Ind.
D.V.M., Indiana Veterinary College, 1915.
Voucher: W. W. Garverick.

TUFTS, SAMUEL R.
Jockey Hollow Rd., Morristown, N.J.
M.R.C.V.S., Royal (Dick) Veterinary College, Edinburgh, 1893.
Vouchers: J. R. Porteus and C. D. Van Houweling.

WATSON, EARL E.
Box 529, Route 1, Louisville, Ky.
D.V.M., Ohio State University, 1916.
Vouchers: L. H. LaFond and E. M. Lang, Jr.

Second Listing

BELL, CAREY L., P.O. Box 1191, Durham, N. Car.
BLAKE, JOHN E., 306 Windham Rd., Willimantic, Conn.
CASTLEBERRY, MERIDA, W., Veterinary Branch, Ft. Worth QM Depot, Ft. Worth, Texas.
CONBOY, JOSEPH R., Pocomoke City, Md.
HAMILTON, JOHN G., Box 124, Clinton, N.J.
KESTEVEN, KEITH V. L., c/o FAO of United Nations, 1201 Connecticut Ave., N.W., Washington, D.C.
LOOMIS, LADD N., 2432 Cavanaugh Rd., Lansing, Mich.
MARTINEZ, CARLOS R., Quinta "Marilina", Avenida La Vega, Calle Stolk, El Paraiso, Caracas, Venezuela, S. A.
SAPRAUSK, JOHN, 840 First Ave., Chula Vista, Calif.
SKOVAJSA, VINCENT, D.V.M., 659 Landan St., Joliet, Ill.
SORDO, LOUIS A., 4910 Bethesda Ave., Bethesda 14, Md.
TIMMONS, R. C., Box 169, Havre, Mont.

1949 Graduate Applicants

First Listing

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Colorado A. & M. College

DEAN, EDWARD E., D.V.M.
2430 Olive St., Denver, Colo.
Vouchers: L. F. Jennings and M. S. Oster.

Iowa State College

GARVIN, ROBERT E., D.V.M.
Elk Point, S. Dak.
Vouchers: R. Allen Packer and H. J. Ruebke.
WITT, LA VERNE E., D.V.M.
Box 671, Sidney, Mont.
Vouchers: G. C. Halver and L. M. Jones.

Michigan State College

LEVY, SOLOMON, D.V.M.
c/o Dr. George Levy, 121 E. Tremont, Bronx, N.Y.
Vouchers: J. Ruwitch and C. D. Van Houweling.

Second Listing

Iowa State College

CUTLER, JAMES H., D.V.M., 4840 Harriet Ave., Minneapolis, Minn.
LUSTIG, PETER, D.V.M., 10 West Pine St., Stockton, Calif.
PAULSON, QUENTIN S., D.V.M., Grantsburg, Wis.
SCAMMON, REGINALD J., D.V.M., Rock Port, Mo.

Michigan State College

JONES, LAURENCE J., D.V.M., 2216 G. St., Bellingham, Wash.

AMONG THE STATES AND PROVINCES

California

Exotic Poultry Disease Recognized in California.—A spirochetosis that causes a heavy mortality among turkeys in South America, Australia, and Europe was diagnosed for the first time in this country by the veterinary staff of the State College of Agriculture. Affected birds become paralyzed and die in large numbers. Chickens also are susceptible.—*Country Gentleman, October,* 1949.

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Artificial Mating.—Artificial insemination of Hampshire hens with semen of Cornish males, by the Holly Farms at Van Nuys, for precision breeding of fryers yielded four-pounders at 12 weeks of age.—*Country Gentleman—August,* 1949.

District of Columbia

Veterinary Panel of the Association of Military Surgeons.—The annual convention of the Association of Military Surgeons at the Hotel Statler, Washington, D.C., Nov. 10-12, 1949, included a panel, under the auspices of the veterinary section, dealing with diseases common to man and animals.

The panel program follows.

Col. Elbert DeCoursey, M.C., commandant, Army Medical Research and Graduate School, Washington, D.C.: "The Effects of Atomic Bombing on Local Food Supplies."

Dr. Clarence H. Thompson, U.S. Bureau of Animal Industry, Washington, D.C.: "Newcastle Disease Infection in Man."

Dr. Robert J. Huebner (M.D.), National Institutes of Health, Bethesda, Md.: "Q Fever; Bovine Infection with Coxiella Burneti."

Major T. C. Jones, V.C., Armed Forces Institute of Pathology, Washington, D.C.: "The Significance of Canine Leptospirosis in Military Preventive Medicine."

S/J. A. MCCALLAM, *Brigadier General, V.C.*

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Quarterly Meeting.—The District of Columbia Veterinary Medical Association held its fourth quarterly meeting in the Pan American Room of the Mayflower Hotel on Oct. 20, 1949. Dr. Raymond Snyder, Upper Darby, Pa., discussed "What Are We Doing in the Field of Veterinary Ethics?" His talk was accompanied by a number of well-selected illustrations.

S/CLARENCE H. THOMPSON, JR., *Secretary.*

Georgia

First Anniversary for The Georgia Veterinarian.—In its first year of existence, *The Georgia Veterinarian* has grown from nine pages (two of which were letters) and no advertising to 14 pages, with four pages of advertising and a circulation of 325. Subscriptions have boosted the circulation to 400 for the first issue of 1950. Further evidence of the success of this infant in the field of journalism is its wide distribution—18 states, besides Georgia, and Puerto Rico and Sweden.

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Northern Association.—The North Georgia Veterinary Medical Association held its third quarterly meeting in Rome, Aug. 21, 1949. Dr. J. A. Giddings, Fulton County health department veterinarian discussed "Aspects of Promiscuous Use of Chicken Embryo Rabies Vaccine and Its Effect on the Control of Rabies in Fulton County."

Veterinarians and their wives were entertained at a barbecued chicken dinner at the Forrest Hotel, after which the women enjoyed a sightseeing tour of the Barry School and Shorter College, while members of the association participated in a round table discussion of problems of general practice.

s/C. C. RIFE, *Secretary.*

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South Georgia Association.—The regular meeting of the South Georgia Veterinary Association was held in Cordele, Oct. 16, 1949, at the hospital of Dr. Britt Phillips. The meeting featured a round table discussion on "Small Animal Diseases" and a film on rabies, prepared by Drs. A. L. Stafford and Britt Phillips.

s/W. L. SIPPEL, *Secretary.*

Illinois

Joint Meeting of Veterinarians and Public Health Officers.—On Nov. 16-17, 1948, veterinarians and public health officers met in the Hotel Abraham Lincoln, Springfield, in an attempt to clarify some of the areas of common veterinary and human medical interest and responsibility. The meeting was a result of requests from both veterinarians and public health officers who attended the Institute on Public Health Practices in Springfield on March 21-23, 1949. The program follows.

Dr. Roland R. Cross (M.D.), director, Illinois Department of Public Health: "Veterinary Public Health—Our Mutual Responsibility."

Drs. Walter Stevenson (M.D.), president, Illinois Medical Association; R. M. Carter (D.V.M.), president, Illinois State Veterinary Medical Association; and James H. Steele (D.V.M.), chief, Veterinary Public Health Division, U. S. Public Health Service, Atlanta, Ga.: Meeting the Veterinary Public Health Challenge."

Dr. Leonard M. Schuman (M.D.), acting chief, Division of Communicable Diseases, Illinois Department of Public Health: "Epidemiology."

Mr. D. B. Morton, sanitary engineer, Division of Sanitary Engineering, Illinois Department of Public Health: "Foods of Animal Origin."

Dr. L. R. Davenport, consultant in veterinary medicine, Division of Communicable Diseases, Illinois Department of Public Health: "Disease Control."

Dr. W. H. Tucker (M.D.), president, Illinois Association of Medical Health Officers, Evanston: "Education."

A panel discussion on questions arising from preceding sessions was composed of representatives from practicing veterinarians, animal disease control, and public health, University of Illinois, and state-federal diagnostic laboratories.

s/L. R. DAVENPORT.

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Chicago Association.—The Chicago Veterinary Medical Association met at the Palmer House Oct. 11, 1949. Dr. Young showed the film "The Kidney in Health," which was supplied by the Eli Lily Co. Dr. Wayne Riser led the discussion which followed.

s/ROBERT C. GLOVER, *Secretary.*

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Dr. Mosier Joins University of Illinois Staff.—Dr. J. E. Mosier (KSC '45), formerly assistant professor, Kansas State College School of Veterinary Medicine, has been appointed assistant professor of veterinary clinical medicine, at the University of Illinois College of Veterinary Medicine.

Dr. J. E. Mosier

s/ROBERT GRAHAM, *Dean.*

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Mississippi Valley Association.—The forty-fourth annual convention of the Mississippi Valley Veterinary Medical Association met at the Hotel Pere Marquette in Peoria on Nov. 2-3, 1949. President R. E. Ruggles, Moline, presiding. The technical program follows.

Dr. E. R. Frank, Kansas State College, Manhattan: "Bovine Surgery" and "Equine Surgery."

Dr. J. C. Carey, West Liberty, Iowa: "Diseases of Beef Cattle Encountered in Practice."

Dr. L. E. Boley, University of Illinois, Urbana: "Diagnosis and Treatment of Sterility in Dairy Cattle."

Dr. Jack Ray, Omaha, Neb.: "Report on International Veterinary Congress" and "Swine Erysipelas."

Dr. Kenneth Smith, Sioux City, Iowa: "Everyday Problems in Small Animal Practice."

Dr. H. C. H. Kernkamp, University of Minnesota, St. Paul: "Baby Pig Problems."

Dr. Paul Beamer, University of Illinois, Urbana: "Newcastle Disease."

Dr. A. E. Bott, Belleville: "Veterinary Public Relation Values—Home and Abroad."

s/R. E. KIRKPATRICK, *Secretary.*

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Dr. Fidler Resigns.—On Aug. 1, 1949, Dr. C. E. Fidler (CVC '05) resigned as superintendent of livestock industry, Illinois Department of Agriculture, and Dr. Roy A. Thompson (CVC '10), Clinton, was appointed to this position.

Dr. Fidler was in general practice in Cuba and Canton until 1923 when he accepted a position as county veterinarian in Kankakee. He remained in this position until 1941 when he was appointed state veterinarian. In 1945, when the office of state veterinarian was eliminated, Dr. Fidler was appointed as superintendent of livestock industry. During his tenure of office, nine bills became laws, which confined animal disease control under the direction of graduate veterinarians.

In 1947, Dr. Fidler was elected president of the Illinois State Veterinary Medical Association, and in 1948, he became vice-president of the U. S. Livestock Sanitary Association. He was recently appointed as a member of a national committee to consult with the national assembly of directors and secretaries of agriculture to formulate and present recommendations on livestock disease control to the U. S. secretary of agriculture.

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Prize-Winning Barrow.—A Hampshire-Poland China cross, weight 230 lb., sold for $336.80 ($1.45 a lb.) at the Junior Market Hog Show, Union Stock Yards, in September. The champion was raised and conditioned by 17-year-old Alvin Warren of De Kalb County.

Indiana

Short Course.—The thirty-seventh annual short course for Indiana veterinarians was held at Purdue University, Lafayette, Oct. 5-7, 1949. The scientific program follows. Speakers not otherwise identified are members of the staff of the Department of Veterinary Science at Purdue University.

Dr. W. W. Bay: "Studies of Transmissible Gastroenteritis in Baby Pigs."

Dr. F. V. Washko: "X Disease of Cattle in Indiana."

Dr. R. W. Elrod, state veterinarian, Indianapolis: "Animal Disease Control Situations in Indiana."

Dr. J. N. Campbell, University Farm, St. Paul, Minn.: "Observations Made in General Practice."

Mr. C. M. Vestal, Purdue University, Lafayette: "Salt Poison in Pigs."

Dr. N. B. McCullough (M.D.), College of Medicine, University of Chicago: "Human Brucellosis."

Dr. B. J. Killham, Michigan State College, East Lansing, Mich.: "Some Observations of the Results of the Use of M Vaccine as Protection Against Brucellosis in Cattle."

Drs. L. P. Doyle and A. L. Delez: "Anthrax in Indiana."

Dr. L. M. Hutchings: "Effect of some Chemotherapeutic Agents as a Treatment for Brucellosis in Swine."

Drs. H. E. Moses and D. P. Gustafson: "Some Practical Aspects of Newcastle Disease Vaccination."

Miss Doris Bunnell: "Some of the Causes of Baby Pig Losses."

Dr. J. F. Bullard: "A Comparison of the Various Surgical Procedures in Reducing Umbilical Hernias in Swine."

Dr. C. H. Cunningham, School of Veterinary Medicine, Michigan State College, East Lansing: "Respiratory Diseases of Poultry."

Dr. R. D. Turk, School of Veterinary Medicine, Texas A. & M. College, College Station: "Parasites and Parasitic Diseases of Ruminants."

Dr. F. B. Young, Waukee, Iowa: "Diseases of Beef Cattle."

Dr. N. J. Volk (Ph.D.), associate director Agricultural Experiment Station, Purdue University: "Remarks."

Dr. V. L. Tharp, College of Veterinary Medicine, The Ohio State University, Columbus: "Diagnosis and Surgical Treatment of Traumatic Pericarditis and Traumatic Gastritis in Cattle."

Dr. C. C. Morrill, College of Veterinary Medicine, University of Illinois, Urbana: "Diseases of Swine."

Dr. Walter Wisnicky, Fond du Lac, Wis.: "Sterility in Cattle, Including Comments Concerning Relations to Artificial Insemination Association Work."

Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago, Ill.: "Affairs of the American Veterinary Medical Association."

s/C. R. DONHAM, *Head, Department of Veterinary Science.*

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AVMA Exhibits Shown at State Meetings.—One phase of a stepped-up public relations program of the Indiana Veterinary Medical Association has been the showing of AVMA exhibits at various meetings through the state. On September 1 to 9, the four small panels depicting the various types of veterinary practice were exhibited at the Indiana State Fair and the pamphlet "What the Veterinary Profession Means to You," printed by

the Women's Auxiliary to the AVMA, was available for distribution. The large exhibit on brucellosis was shown at the annual meeting of the Indiana Medical Association on September 26 to October 1, and at the International Dairy Exposition in Indianapolis, October 8 to 15. Reprints from the JOURNAL of "What We Know About Brucellosis" were available for distribution at both of these meetings.

At each of these showings, the exhibits were viewed with a great deal of interest and the literature was widely distributed.

s/JOHN H. SCRUGGS.

Iowa

Eastern Association.—The thirty-sixth annual meeting of the Eastern Iowa Veterinary Association was held at the Hotel Montrose, Cedar Rapids, Oct. 20-21, 1949. The scientific program follows.

Dr. Paul C. Bennett, Veterinary Diagnostic Laboratory, Iowa State College, Ames: "Hyperkeratosis (X Disease) of Cattle."

Dr. C. D. Van Houweling, director, professional relations, AVMA, Chicago, Ill.: "Greetings from the AVMA."

Dr. John B. Herrick, Dairy Extension Service, Iowa State College, Ames: "The Insemination Ring and Sterility Problems as They Apply to Private Practice."

Dr. J. K. Northway, Kingsville, Texas: "Experiences as Veterinarian of King Ranch, Kingsville, Texas."

Mr. W. A. Albrecht, Department of Soils, University of Missouri College of Agriculture, Columbia, Mo.: "Soil Fertility and Animal Nutrition."

Dr. E. R. Frank, Department of Surgery and Medicine, Kansas State College, Manhattan.: "General Surgery."

Dr. J. W. Cunkelman, Fort Dodge Laboratories, Inc., Fort Dodge, Conducted a question box session.

Mr. Peter N. Jans, broker, Illinois Veterinary Medical Association, Chicago: "Topic of the Hour: Maximum Dollar Benefits at Minimum Dollar Costs."

Dr. A. H. Quin, head, Professional Service Division, Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.: "The Future Outlook on Control and Eradication of Hog Cholera."

Dr. R. G. Moore, Dunlap: "Swine Erysipelas Control."

Dr. R. A. Minor, Sigourney: "Pulmonary Edema of Swine."

Dr. I. Forest Huddleson, Department of Bacteriology and Public Health, Michigan State College, East Lansing, Mich.: "Results to Date on Use of M Vaccine in the Control of Brucellosis."

Dr. B. J. Killham, School of Veterinary Medicine, Michigan State College, East Lansing, Mich.: "Some Observations on the Control of Mastitis and Brucellosis."

Mr. W. D. Knox, associate editor, *Hoard's Dairyman*, Fort Atkinson, Wis.: "The Veterinary Profession as Viewed by the Dairy Industry."

Dr. H. E. Pinkerton, Fort Dodge Laboratories, Inc, Fort Dodge, conducted a discussion on "General Practice."

The new officers of the association are Drs. L. P. Scott, Waterloo, president; R. J. Beamer, Ottumwa, vice-president; M. R. Wagner, Olin, secretary; and A. R. Menary, Cedar Rapids, treasurer.

s/M. R. WAGNER, *Secretary*.

Kansas

New Association.—The Wichita Veterinary Medical Association, recently organized under the leadership of Dr. J. A. Bogue (KSC '21), will meet the third Thursday of each month. Officers of the new association are Drs. J. A. Bogue, president; and George W. Allen, secretary.

s/GEORGE W. ALLEN, *Secertary*.

Maine

New England Association.—The fifteenth annual convention of the New England Veterinary Medical Association was held at the Poland Spring House, Poland Spring, on Oct. 18-19, 1949. The scientific program follows.

Dr. John D. Beck, Department of Veterinary Medicine, University of Pennsylvania, Philadelphia: "X Disease of Cattle" (with illustrations).

Dr. J. F. Witter, animal pathologist, University of Maine, Orono, was moderator of a panel discussion on poultry practice. Other members of the panel were Dr. C. L. Martin, Rochester, N. H.; and Messrs. Harry Grant, Charles M. Cox Co., Boston, Mass.; George Coleman, Jr., Brunswick, Maine; and Frank Reed, poultry extension specialist, University of Maine.

Dr. Jacques Jenny, University of Pennsylvania, Philadelphia: "Orthopedic Problems in Small Animals" (with illustrations).

Dr. Francis M. Austin, Belchertown, Mass.: "Surgery in General Practice" (with illustrations).

Dr. H. B. Siegle, Dedham, Mass.: "Prophylactic and Therapeutic Use of Distemperoid Virus."

Dr. Gerry B. Schnelle, assistant chief of staff, the Angell Memorial Animal Hospital, Boston: "X-Ray Diagnosis in Small Animal Diseases."

Dr. R. McG. Archibald, Truro, Nova Scotia: "Handling Cervical Choke in Cattle."

Dr. J. Lavere Davidson, Upjohn Co., Kalamazoo, Mich.: "Anemias with Suggestions Concerning Treatment in Small Animals."

Dr. W. M. Coffee, La Center, Ky., president-elect of the AVMA: "General Practice."

Dr. M. G. Fincher, New York State Veterinary College, Ithaca, N. Y.: "Sterility Problems in Cattle Practice."

s/C. L. BLAKELY, *Secretary*.

Michigan

Personal.—Dr. J. P. McEvoy (MSC '47) announces the opening of the McEvoy Animal Hospital at 13621 West Eleven Mile Road at Coolidge Highway, Oak Park, on Nov. 15, 1949.

Minnesota

Southern Society.—The Southern Minnesota Veterinary Medical Society held its fall dinner meeting in Austin on Oct. 12, 1949. Dr. L. P. Doyle, associate pathologist, Purdue University, Lafayette, Ind., showed motion pictures and spoke on transmissible gastroenteritis and dysentery in swine.

s/GEORGE A. YOUNG, JR., *Secretary.*

Nebraska

Personal.—Dr. M. K. Jarvis (KSC '40), practitioner of Beatrice, Neb., and former instructor on the faculty of Colorado A. & M. College, has joined the scientific staff of the Corn States Serum Company, Omaha. He will work with Dr. C. C. Foulk on the production and further refinement of canine distemper and swine erysipelas antiserums.

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., affiliated with the New York State Veterinary Medical Society, was held at the Hotel Statler, Oct. 5, 1949.

Dr. David K. Detweiler, associate professor of physiology and pharmacology, the School of Veterinary Medicine, University of Pennsylvania, Philadelphia, spoke on "Cardiac Disease in Dogs." The subject was illustrated by motion picture and slides.

Drs. Mary C. Hallenbeck, New York, N. Y., John R. McCoy, Trenton, N. J., and Arthur Trayford, Huntington, N. Y., were introduced as new members.

s/C. R. SCHROEDER, *Secretary.*

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Colonel Kester Judge in National Horse Show.—Colonel Wayne O. Kester, USAF (V.C.), chief of the Veterinary Division, Office of The Surgeon General, Headquarters U.S. Air Force, was selected to serve on the judging staff as official veterinarian for the National Horse Show held in Madison Square Garden, New York City, Nov. 1-9, 1949. Colonel Kester has long been active in both military and civilian horse show events. He is an accredited horse show judge and served in a similar capacity at the National Horse Show last year.

Ohio

U.S. Livestock Sanitary Association.—The fifty-third annual meeting of the United States Livestock Sanitary Association was held at The Neil House, Columbus, on Oct. 12-14, 1949, President T. O. Brandenburg, Bismarck, N. Dak., presiding. The following program was presented.

Dr. Jacob Traum, Berkeley, Calif.: "Suggestions for Reducing the Incidence of Problem Herds in the Tuberculosis-Eradication Program and Recommendations for Handling Them."

Dr. Frank Thorp, Jr., East Lansing, Mich.: "Swine Enteritis."

Mr. S. C. Sprunger, Kidron: "Livestock Auction from Operator's Standpoint."

Dr. L. P. Doyle, Lafayette, Ind.: "Rheumatoid Disease in Swine."

Dr. Philip A. Hawkins, East Lansing, Mich.: "Intestinal Protozoa of Turkeys."

Dr. Garth A. Edge, Toronto, Ont.: "Organized Public Health and the Veterinarian."

Dr. E. F. Sanders, Kansas City, Mo.: "Current Status of Hog Cholera Vaccines."

Dr. Herman Oliver, John Day, Ore.: "Experiences in Controlling Brucellosis of Cattle in a Range Herd."

Drs. B. J. Killham, Glen Reed, and C. F. Clark, East Lansing, Mich.: "Observations on the Use of Brucella M Vaccine in the Field."

Drs. J. Traum, Berkeley, Calif., and B. Edgington, Wooster, Ohio: "Progress Report on the Use of Brucella M Vaccine Under Controlled Experimental Conditions."

Dr. L. M. Hutchings, Lafayette, Ind.: "Swine Brucellosis Control."

Dr. A. S. Schlingman and Miss Mary C. Manning, Detroit, Mich.: "Inactivated Brucella Abortus as an Immunizing Agent in Cattle."

Drs. D. W. Gates, J. W. Hastings, W. M. Mohler, L. J. Poelma, College Park, Md., and Washington, D.C.: "Inoculation Tests in Splenectomized Calves to Check Efficacy of Complement-Fixation Test in the Diagnosis of Anaplasmosis."

Dr. H. B. Cox, Pearl River, N. Y.: "Vaccination Against Rabies."

Dr. George E. Cottral, East Lansing, Mich.: "Avian Lymphomatosis, Another Egg-borne Disease."

Dr. J. F. Delaplane, Kingston, R. I.: "Recent Work on Respiratory Diseases of Poultry, Other than Newcastle."

Mr. George Berry, Quincy, Ill.: "The Disease Threat to the Hatchery Industry."

Dr. S. O. Fladness, Washington, D.C.: "The World Foot-and-Mouth Disease Problem."

Dr. M. S. Shahan, Washington, D.C.: "Current Research on Foot-and-Mouth Disease."

Dr. F. L. Schneider, Albuquerque, N. M.: "The Status of Foot-and-Mouth Disease Eradication in Mexico."

Dr. L. E. Starr, Atlanta, Ga.: "A Reporting System for Communicable Diseases of Animals" and "Progress Report on Avianized Antirabies Vaccination Program."

Dr. M. D. Baum, Denver, Colo.: "Experiences Covering Two Years of Animal Disease Reporting."

The following committee reports were read: Tuberculosis, Dr. R. L. West; Community Auction Markets, Dr. George Rathman; Legislation, Mr. Will J. Miller; Laws and Regulations, Dr. H. U. Garrett; Transmissible Diseases of Swine, Dr. J. D. Ray; Parasitic Diseases, Dr. D. F. Eveleth; Meat and Milk Hygiene, Dr. C. S. Bryan; Biological and Pharmaceutical products, Dr. A. H. Quin; Federal Bureau of Animal Industry Bru-

cellosis Project for Fiscal Year 1948-49, Dr. A. K. Kuttler; Advisory Committee on Anaplasmosis, Dr. A. H. Groth; Rabies, Dr. A. L. Brueckner; Resolutions, Dr. C. P. Bishop; Policy, Dr. T. C. Green; Representatives to Meeting of Commissioners, Directors, and Secretaries of Agriculture, Dr. R. A. Hendershott; Public Relations, Dr. R. W. Smith; Transmissible Diseases of Poultry, Mr. T. C. Byerly; Foot-and-Mouth Disease, Dr. H. F. Wilkins; Morbidity and Mortality, Dr. C. R. Schroeder; Formation and Activities of the National Brucellosis Committee, Mr. William Knox; Committee on Brucellosis, Dr. C. F. Clark.

The Committee on Brucellosis incorporated the recommendations of the AVMA Committee on Practitioner Participation on Brucellosis Control as amendments to the basic four-plan program for brucellosis eradication adopted by the U.S.L.S.A. in 1947 and amended in 1948 (*see* editorial, this issue, p. 487).

New officers of the Association are Dr. C. P. Bishop, Harrisburg, Pa., president; Mr. Ferd. E. Mollin, Denver, Colo., first vice-president; Dr. Ralph L. West, St. Paul, Minn., second vice-president; Dr. T. Childs, Ottawa, Canada, third vice-president; Dr. R. A. Hendershott, Trenton, N. J., secretary-treasurer.

s/R. A. HENDERSHOTT, *Secretary.*

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Milk and Food Sanitarians Association.—The thirty-sixth annual convention of the International Association of Milk and Food Sanitarians was held in the Deshler-Wallick Hotel, Columbus, Oct. 20-22, 1949. Some of the subjects covered in the three-day program were milk inspection, detergent-sanitizers on the dairy farm, thermal death-time studies of coliform bacteria in milk, DDT and related insecticides in milk, and pest control and food sanitation. Among the speakers was Dr. W. H. Haskell, Beloit, Wis., who discussed "Food Handler Training Problems."

Pennsylvania

Dr. Mohler Honored by State Chamber of Commerce.—The September 29 issue of the *Frankford Times* carried a lead story about the selection of Dr. John R. Mohler (UP '96), retired former chief of the U.S. Bureau of Animal Industry, as the first "Pennsylvania Ambassador" to be chosen from Philadelphia to receive one of the awards established last year by the Pennsylvania State Chamber of Commerce to honor former residents of the state who have attained distinction in business, education, military and government service, literature, the clergy, and other fields.

Dr. Mohler was nominated for the award by the Northeast Philadelphia Chamber of Commerce, the area of Philadelphia of which he was a native and where he received his preliminary education before enrolling at the University of Pennsylvania School of Veterinary Medicine where he graduated in 1896. He was a guest of honor at a dinner on October 6 where he was presented the citation and plaque for the award. Governor Duff was the principal speaker at the dinner.

Ninety nominations for "Pennsylvania Ambassador" were made earlier throughout the state by local civic, commercial, and service

Dr. John R. Mohler

organizations and from them the State Chamber of Commerce selected 4 women and 22 men for the 1949 citations. Dr. Mohler was cited for "outstanding achievements in the best traditions of the Commonwealth" with special reference to his work in livestock disease control.

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State Officers.—Officers elected at the business session of the Pennsylvania State Veterinary Medical Association during its annual meeting on Oct. 5-7, 1949, were Drs. Russell S. Detwiler, Reading, president; R. D. Hoffman, Bedford, president-elect; James McCahon, Downingtown, first vice-president; H. Robert Becker, York, second vice-president; J. Robert Brown, New Castle, third vice-president; E. T. Booth, Philadelphia, treasurer; and R. C. Snyder, Upper Darby, secretary.

s/DONALD G. LEE, *Resident Secretary.*

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Keystone Association.—The Keystone Veterinary Medical Association met at the University of Pennsylvania School of Veterinary Medicine on Oct. 26, 1949. Dr. R. C. Klussendorf, assistant executive secretary of the AVMA discussed "Newer Aspects of Animal Nutrition" (with illustrations).

s/RAYMOND C. SNYDER, *Secretary.*

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Personal.—Dr. Albert L. Opp, formerly with Minde Dairy, Canal Zone, Panama, is now associated with Dr. J. Robert Brown (UP '37), New Castle, Pa.

South Dakota

State Association.—The annual meeting of the South Dakota Veterinary Medical Association was held at the Carpenter Hotel, Sioux Falls, on Oct. 5-6, 1949. The following program was presented.

Dr. Ray Robinson, state veterinarian, Pierre: "Disease Conditions of South Dakota."

Dr. Neil Plank, veterinarian in charge, BAI, Pierre: "Brucellosis."

Dr. L. T. Railsback, Ellsworth, Minn.: "Swine Obstetrics."

Dr. B. S. Pomeroy, University of Minnesota, St. Paul: "The Use of Sulfonamides in Poultry Practice."

Dr. E. J. Frick, Kansas State College, Manhattan: "The Business Side of Practice" and "Small Animal Practice."

Dr. Donald Slaughter (M.D.), dean, School of Medicine, University of South Dakota, Vermillion: "The Relationship of the Physician to the Veterinarian."

Dr. A. G. Krause, Cherokee, Iowa: "Swine Practice."

Dr. D. E. Trump, Owatonna, Minn.: "Cattle Practice."

Dr. L. M. Roderick, Kansas State College, Manhattan: "X Disease of Cattle."

Dr. G. R. Burch, Pitman-Moore Co., Zionsville, Ind.: "Veterinary Research and the Present Trend of Veterinary Therapy."

Dr. Jerry Sotola (Ph.D.), assistant director, Livestock Division, Armour & Co., Chicago, Ill.: "Nutritional Topics of Interest to the Veterinary Profession."

New association officers are Drs. F. W. Nold, Madison, president; S. E. Gray, Aberdeen, vice-president; and R. M. Scott, Sioux Falls, secretary-treasurer.

s/R. M. SCOTT, *Secretary.*

Washington

State Association.—The annual meeting of the Washington State Veterinary Medical Association was held in Yakima on Sept. 30-Oct. 1, 1949, President M. O. Mulqueeney presiding. The following reports were read: Ethics, Dr. LeMar Gaw; Practice Act, Dr. Phil Millard; Progress of the College of Veterinary Medicine, Dean R. E. Nichols; AVMA Meeting in Detroit, Dr. Peter MacKintosh.

Dr. George Ruggles, Seattle, demonstrated intermedullary pins in a cat. The balance of the scientific program was composed of panel discussions on large and small animals. This type of program, started last year, was well received and allows for wide member participation.

The following will hold office for the coming year: Drs. LeMar Gaw, Seattle, president; Robert Phelps, Vancouver, vice-president; and J. L. Ellis, Olympia, reëlected secretary-treasurer. The board of trustees will consist of the new officers, Dr. Mulqueeney, the retiring president, and Drs. H. A. Trippear, Peter MacKintosh, E. E. Wegner, Phil Millard, and Norman Garlick.

s/J. L. ELLIS, *Secretary.*

West Virginia

State Association.—The annual meeting of the West Virginia Veterinary Medical Association was held Oct. 19, 1949, at the Gore Hotel in Clarksburg, President C. F. Hale presiding. The program follows.

Dr. S. E. Hershey, Charleston: "History of the West Virginia Veterinary Medical Association." Dr. Hershey is the only survivor of the six original members of the association which was organized in 1898.

Dr. Fred J. Kingma, Columbus, Ohio: "Antibiotic Therapy in Veterinary Practice."

Dr. E. R. Coon, Charleston: "Brucellosis, Tuberculosis, and Sheep Scab Eradication."

Dr. James P. Bailey, Bluefield: "Equine Practice."

The following officers were elected: Drs. H. P. Buckley, Lewisburg, president; Leo Kotchek, Kingwood, vice-president; and James P. Bailey, Bluefield, secretary-treasurer.

s/JAMES P. BAILEY, *Secretary.*

FOREIGN NEWS

Holland

Director Frenkel Clarifies His Views on U.S. Foot-and-Mouth Disease Laboratory.—The following letter of Nov. 9, 1949, received by the editors of the JOURNAL from Dr. Frenkel is self-explanatory:

Gentlemen:

I have just read the item in the "Foreign News" (p. 396) of the November, 1949, *Journal of the American Veterinary Medical Association* entitled, "Location for Foot-and-Mouth Disease Laboratory."

The quotation of the statement by me as to the location of the foot-and-mouth disease vaccine laboratory is accurate only under certain conditions. The understanding would be that such a laboratory might preferably be located close to a ready supply of epithelial tissue for cultivation of the virus. On the other hand, such a location would not be appropriate, in my opinion, if in conjunction with the packinghouse, there were stockyards from which some animals would be sent to the country for breeding or other purposes. Certainly no such location could be considered in the United States where the disease does not exist.

The second paragraph of the article is not in accord with my views relative to the research laboratory being planned by the Bureau of Animal Industry. It has been my privilege to study these plans in detail, and I may say that

my colleagues in Europe and I have had an opportunity to participate in the formulation of these plans. I do not believe that anything other than a large installation would be adequate for a well-rounded-out program of research on foot-and-mouth disease in the United States.

Sincerely,

s/H. S. FRENKEL, *Director*
State Institute for Veterinary Research
Amsterdam, Holland.

Philippine Islands

Death of a Famous Philippine Veterinarian.—Dr. Gregorio San Agustin (PHIL '16), 55, former director of the Bureau of Animal Industry of the Philippines, and the first Filipino dean of the

Dr. Gregorio San Agustin

University of the Philippines College of Veterinary Medicine, died Aug. 18, 1949, of a cerebral attack. He was well known for his research work in veterinary medicine, as a promoter of livestock industry, educator, veterinarian, and as an author of books on animal husbandry.

Dr. San Agustin was born in San Roque, Cavite, on April 25, 1894, and after receiving his D.V.M. degree, became an instructor in veterinary anatomy at the university. From 1918-1920, he specialized in animal nutrition and husbandry at the universities of Wisconsin, Illinois, and Cornell. When he returned to his native country in 1921, he was appointed assistant professor and secretary of the college. He headed a delegation to Australia, in 1925, to study the importation of cattle, and from 1925-1939, he was dean of the veterinary college. He resigned this position to devote his time to his duties as director of the bureau of animal industry.

He was a member of the AVMA, Philippine Veterinary Medical Association, National Geographic Society, Society for the Advancement of Science, Philippine Scientific Society, National Research Council, and other scientific organizations. From 1946 to 1947, Dr. San Agustin was technical assistant of the Philippine Syndicate. Chamber of Commerce, and technical advisor of the Philippine Agricultural and Industrial Corporation. He was, at the time of his death, the general manager of the Mariano Salazar and Company (MASALCO).

He is survived by his wife and four children.

s/JOSE B. ARANEZ, *Resident Territorial Secretary.*

VETERINARY MILITARY SERVICE

Colonel Kester Heads Air Force Veterinary Medical Service.—Col. Wayne O. Kester (KSC '31) will head the newly created Veterinary Service of the U.S. Air Force.

It is expected that the new Air Force Medical Service will provide more flexibility, better control, and more efficient coördination of air force medical services under the unification of services within the Department of Defense.

The Air Force Veterinary Service will have the traditional military veterinary service mission in connection with food inspection and food sanitation. However, the scope has been broadened materially, especially in the field of public health and preventive medicine. The inspection of all types of foods, as well as some aspects of nutrition and mess sanitation, will fall under the purview of the veterinary service.

Air force veterinary personnel will continue to conduct procurement inspection of foods at point of origin in designated areas where Air Force personnel are stationed.

Forty-two regular and 36 reserve officers of the Veterinary Corps, on active duty, have transferred to the U.S. Air Force Veterinary Service, and an increase in strength is anticipated.

Inactive reserve officers desiring to transfer to the Air Force Veterinary Reserve and officers desiring active duty with the Air Force should make application to the Veterinary Division, Office of The Surgeon General, Headquarters U. S. Air Force, Washington 25, D.C.

After receiving his D.V.M. degree, Colonel Kester served on the Mexican border with the first Cavalry Division and at several stations throughout the United States until 1939, when he was transferred to the Hawaiian department. He was in the Pearl Harbor attack, and remained in the Pacific Theater until the end of World War II, serving as chief veterinarian, U.S. Army Forces, Pacific Ocean Areas.

At the termination of hostilities, Colonel Kester was assigned to the Veterinary Division in the office of The Surgeon General, where he was chief of the Meat and Dairy Hygiene Branch, supplying policies and technical guidance for the Army Veterinary Food Inspection Service. He, in collaboration with Major Everett B. Miller, was the first veterinary officer to evaluate and report on the veterinary aspects of atomic explosion (JOURNAL (Oct., 1948): 325-329; and (March, 1949): 113-119). Colonel Kester is credited with the organization and operation of the Army's first and largest antibacterial warfare

organization, which was put into effect immediately following the outbreak of World War II.

Colonel Kester transferred to the Air Force on July 1, 1949, when the Air Force Medical Service was established.

STATE BOARD EXAMINATIONS

Illinois—The Veterinary Division of the Department of Registration and Education, Springfield, Ill., will hold an examination of applicants for registration as licensed veterinarians in Chicago on Dec. 19 and 20, 1949. Applications should be on file about fifteen days prior to date of examination. Noble J. Puffer, director, Veterinary Division, Department of Registration and Education, Springfield, Ill.

Minnesota—The Minnesota State Veterinary Examining Board will hold examinations on Jan. 10-11, 1950. Applications and further information may be obtained from Dr. D. B. Palmer, Executive Secretary, Veterinary Examining Board, Wayzata, Minn.

DEATHS

★**Anton S. Almeida** (SAN FRAN '09), 63, Dixon, Calif., died Sept. 30, 1949. Dr. Almeida had been engaged in large animal practice. He was a member of the AVMA for thirty-eight years.

★**James G. Anderson** (ONT '36), 36, Woodbury, Conn., died Oct. 12, 1949. Dr. Anderson, who had served in the U.S. Army Veterinary Corps from August, 1940 to October, 1945, and had attained the rank of major, had practiced in Woodbury since 1945. Dr. Anderson was admitted to the AVMA in 1940.

S. L. Blount (UP '98), Chicago, Ill., died July 13, 1949. Dr. Blount had worked with the BAI in the National Stockyards in Chicago. He had been a member of the AVMA.

★**Robert A. Caldwell** (SAN FRAN '12), 65, Colusa, Calif., died Aug. 2, 1949. Dr. Caldwell was a member of the AVMA for thirty-three years.

★**John J. Ferguson**, 75, Clinton, Iowa, died Sept. 11, 1949. An honorary member of the AVMA since 1918, Mr. Ferguson was born Dec. 1, 1874, and after graduating from the Ontario Agricultural College, became an instructor in animal husbandry at Michigan State Agricultural College. In 1902, he joined the staff of Swift and Company, Chicago, Ill., where he played an important part in the development of the feed department and was considered one of the best informed men in the industry on the science of livestock nutrition. After thirty-five years with Swift and Company, Mr. Ferguson retired and moved to Breezy Point, Clinton, Iowa. His wife preceded him in death in 1943.

As secretary-treasurer of the U.S. Livestock Sanitary Association, 1910-1916, Mr. Ferguson was elected an honorary member of the AVMA in 1918.

★**Laurence D. Frederick** (CIN '18), 52, Chicago, Ill., died Oct. 19, 1949, from a coronary ailment which first appeared about a year and a half ago. Dr. Frederick had spent practically all his professional life with Swift and Company and was chief veterinarian of that organization at the time of his death. He was widely known as an authority on diseases of food-producing animals, was prominent in the work of the National Livestock Loss Prevention Board, and active in AVMA committee work, having been a member and chairman (1947-48) of its committee on diseases of food-producing animals. He joined the AVMA in 1918.

He was born in Jerome, Ohio, July 12, 1897, and married Lauretta Van Beck in 1919. He is survived by his widow and two sons, Dr. Laurence D., Jr., a physician, and Marvin.

★**James N. Frost** (CORN '07), 64, Ithaca, N. Y., died Oct. 28, 1949. A student and professor at New York State Veterinary College, Cornell University, for forty-five years, Dr. Frost was widely known as an excellent teacher and as an authority on equine surgery. He was veterinary consultant of the American Thoroughbred Racing Association and was frequently called to Kentucky, Maryland, Virginia, and other states as consultant to large race horse stables. A technique for the roaring operation, which he perfected, is now widely used. He was joint author with the late Dr. Walter L. Williams of "Surgical and Obstetrical Operations," published in 1919 and revised, in collaboration with Dr. A. G. Danks, in 1943. He has also published other articles in current veterinary medical journals.

Dr. Frost was a member of the New York State Veterinary Medical Society, the Southern Tier Veterinary Association, and was admitted to the AVMA in 1913. He is survived by his widow and one daughter.

Gregorio San Agustin (PHIL '16), 55, Manila, P.I., died on Aug. 18, 1949. Dr. San Agustin had been a member of the AVMA. An obituary appears in this issue of the JOURNAL, p. 509.

★**Guy M. Smith** (OSU '17), 56, Chicago, Ill., died Oct. 20, 1949, following a heart attack. Dr. Smith was born Jan. 23, 1893, in Catawissa, Pa., and studied animal husbandry at Pennsylvania State College before entering veterinary school. He served in the Veterinary Corps in World War I, then joined the Bureau of Animal Industry, and was engaged in meat inspection work at the time of his death. He joined the AVMA in 1918 and was also a Mason, a member of the American Legion and the Penn State Club. He is survived by his widow and one daughter.

*Indicates members of the AVMA.

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An' Related Topics

WATCH YOUR ENGLISH AND OURS

The object of this column, which we expect to run until the AVMA style book is published, is to point out frankly the substandard usage that is finding its way into veterinary literature, to the detriment of the station the profession seeks to attain. A secondary objective is to enable publications of constituent associations to the AVMA to achieve uniform and correct usage. Involved mostly are capitalizing, spelling, punctuating and marking, italicizing, abbreviating.

Competent critics of the present time are specifying, in particular, that the English language has been deteriorating since 1914 when the world was overtaken by international disorder that turned all minds to the material problems of life at the expense of culture. The downward trend has, perhaps, been more noticeable in veterinary medical literature because no effort was ever made to keep it abreast of the times in the literary sense, as other learned professions have done, by publishing a style book as a guide for our own field.

This column may be regarded as a sketchy introduction to the contents of the "Stylebook of the AVMA" which, as stated before, is now in preparation. If it makes the reader more conscious of the harmful effect of subnormal English in supposedly classical material, that alone will be a worth-while accomplishment. The task cannot be easy, nor quickly achieved, since the issue itself has to be impressed upon apparently satisfied editors, publishers, writers, and readers with long-established habits that have to be changed. In short, to be confessedly impolite, it seems imperative to emphasize that too many veterinary books and periodicals are written in a sloppy manner, freckled with misused capitals, inconstant punctuation, fantastic abbreviations, bad spelling of plurals, prolixity, and ill-chosen words.

Perish the presumption of any intention to dictate rules on usage to other than AVMA publications. To others, there's but to say take-it-or-leave-it, as the heart desires. Correspondence is invited and criticisms welcomed.

The first installment, which will appear in the January, 1950, issue, will embrace false capitalization, the most conspicuous grammatical corruption of present-day veterinary medical literature.

COMING MEETINGS

Notices of Coming Meetings must be received by 8th of month preceding date of issue

Kentucky short course for graduate veterinarians. Animal Pathology Department, Kentucky Experiment Station, University of Kentucky, Lexington, Ky., Dec. 7-8, 1949 . Ross Brown, University of Kentucky, Lexington, Ky., secretary.

Delaware Veterinary Medical Association. Annual meeting. Newark, Del., Dec. 15, 1949. C. C. Palmer, University of Delaware, Newark, Del., secretary.

Vermont Veterinary Medical Association. Annual winter meeting. Waterman Building, University of Vermont, Burlington, Vt., Dec. 16, 1949. W. D. Bolton, Pine Tree Terrace, Burlington, Vt., resident secretary.

Maryland State Veterinary Medical Association. Annual meeting. Emerson Hotel, Baltimore, Md., Dec. 16-17, 1949. J. Walter Hastings, Sr., Cambridge, Md., secretary.

American Association for the Advancement of Science. Annual meeting. Penn Zone Hotels, New York, N. Y., Dec. 26-31, 1949. Raymond L. Taylor, 1515 Massachusetts Ave., N. W. Washington 5, D. C., assistant administrative secretary.

Ohio State Veterinary Medical Association. Annual meeting. The Deshler-Wallick Hotel, Columbus, Ohio, Jan. 4-6, 1950. F. J. Kingma, 121 E. Weber Rd., Columbus 2, Ohio, secretary.

New York State Veterinary College. Annual conference for veterinarians. Jan. 4-6, 1950. W. A. Hagan, Cornell University, Ithaca, N. Y., dean.

Arizona Veterinary Medical Association. Annual meeting . Hotel Adams, Phoenix, Ariz., Jan. 5-6, 1950. Robert E. McComb, Jr., 21 W. Alta Vista Rd., Phoenix, Ariz., resident secretary.

Oklahoma Veterinary Medical Association. Annual meeting. Skirvin Tower Hotel, Oklahoma City, Okla., Jan. 9-10, 1950. Lewis H. Moe, Stillwater, Okla., secretary.

California State Veterinary Medical Association. Annual midwinter conference. San Luis Obispo, Calif., Jan. 9-11, 1950. Charles S. Travers, 16th and Mission Sts., San Francisco, Calif., executive secretary.

Wisconsin Veterinary Medical Association. Annual meeting. Schroeder Hotel, Milwaukee, Wis., Jan. 12-13, 1949. K. G. Nicholson, 2136 N. Farwell Ave., Milwaukee, Wis., secretary.

(Continued on page 24)

Now Available

BACITRACIN

CSC

for Veterinary Use

An entirely new antibiotic in the veterinary field, Bacitracin-C.S.C. offers great promise in the topical treatment of many surface infections and infected wounds in animals. Bacitracin is effective against a wide spectrum of pathogens, many of which abound in pyogenic lesions of animals. It is administered by local infiltration directly into and around the lesion, or it is applied by means of an ointment directly onto infected ulcers and other open wounds. Rapidity of action and an extremely low index of allergenicity are distinctive advantages of this new antibiotic. Bacitracin should not be administered intramuscularly for systemic action.

Veterinary surgeons are invited to write for literature describing the action and uses of both Bacitracin-C.S.C. (in vials) and Bacitracin Ointment-C.S.C.

Vials

Bacitracin-C.S.C. is supplied in 20 cc. rubber-stoppered vials containing 10,000 units. The optimal concentration for local infiltration is 500 units per cc.

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Bacitracin Ointment-C.S.C., containing 500 units per Gm., is available in 1 oz. tubes.

All C.S.C. veterinary preparations are available through your veterinary supply dealer.

C.S.C. Pharmaceuticals

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(Continued from page 22)

Ontario Veterinary Association. Annual meeting. Chateau Laurier, Ottawa, Ont., Jan. 12-14, 1950. T. Lloyd Jones, Ontario Veterinary College, Guelph, Ont., resident secretary.

Indiana Veterinary Medical Association. Annual meeting. Severin Hotel, Indianapolis, Ind., Jan. 12-14, 1950. W. W. Garverick, Zionsville, Ind., secretary.

Tri-State (Arkansas, Mississippi, Tennessee) Veterinary Conference. Peabody Hotel, Memphis, Tenn., Jan. 16-17, 1950. H. W. Nance, Lawrenceburg, Tenn., secretary.

Intermountain Veterinary Medical Association. Annual meeting. Newhouse Hotel, Salt Lake City, Utah, Jan. 16-18, 1950. M. L. Miner, Utah State Agricultural College, Logan, Utah, secretary.

Iowa Veterinary Medical Association. Annual meeting. Fort Des Moines Hotel, Des Moines, Iowa, Jan. 17-19, 1950. F. B. Young, Waukee, Iowa, secretary.

North Carolina State College of Agriculture. Annual veterinary conference. State College of Agriculture, Raleigh, Jan. 24-27, 1950. C. D. Grinnells, State College of Agriculture, Raleigh, N. Car., chairman.

Michigan State College, School of Veterinary Medicine. Annual postgraduate conference for veterinarians. Michigan State College, Jan. 25-26, 1950. C. S. Bryan, Michigan State College, East Lansing, Mich., dean.

Virginia State Veterinary Medical Association. Winter meeting. Hotel Jefferson, Richmond, Va., Jan. 30-Feb. 1, 1950. Harry K. Royer, 1404 Main St., Lynchburg, Va., secretary.

Illinois State Veterinary Medical Association. Annual meeting. Pere Marquette Hotel, Peoria, Ill., Feb. 1-3, 1950, A. G. Misener, 6448 Clark St., Chicago 26, Ill., secretary.

New Jersey, Veterinary Medical Association of. Annual meeting. Hotel Hildebrecht, Trenton, N. J., Feb. 2-3, 1950. J. R. Porteus, Box 938, Trenton, N J., secretary.

American Animal Hospital Association. Annual meeting. Shirley Savoy Hotel, Denver, Colo., April 24-27, 1950. W. H. Riser, 5335 Touhy Ave., Skokie, Ill., executive secretary.

• • •

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. George E. Martin, 530 Stockton Ave., San José, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas Eville, Route 1, Box 136H, Fresno, Calif., secretary.

(Continued on page 26)

(Continued from page 24)

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. O. A. Soave, 5666 Telegraph, Oakland, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Greater St. Louis Veterinary Medical Association. Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, the third Tuesday of each month. R. S. Wann, Wingate, Ind., secretary.

Jefferson County Veterinary Society, Louisville, Ky., the first Wednesday evening of each month. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

Michiana Veterinary Medical Association. Hotel Elkhart, Elkhart, Ind., 7:00 p.m., the second Thursday of each month. R. W. Worley, 3224 Lincoln Way West, South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New York City Veterinary Medical Association. Hotel Statler, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

(Continued on page 28)

1 out of Every 5 Calves Need Not Die

No one knows so well as you that the 20% loss of heifer calves reported by the U.S.D.A. is a needless waste. You know from experience that many of these losses are caused by faulty nutrition of the pregnant cow or poor management and sanitation of the baby calves.

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The Prosaic Banana Peel.—From the U. S. National Institute of Health comes the discovery that the keeping property of bananas is due to two antibiotic substances contained in the peeling. The one kills fungi, the other bacteria.

(Continued from page 26)

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. I. N. Bohlender, Box 588, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 666 East Highland Avenue, San Bernardino, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. E. W. Paul, Box 866, Redwood City, Calif., secretary.

Redwood Empire Veterinary Medical Association, the second Tuesday of every other month. Charles D. Stafford, Novato, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. R. J. McFarland, 3621 Jewell St., San Diego 9, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. D. H. McDole, 8674 Melrose Ave., Los Angeles 46, secretary.

South Florida Veterinary Society, the third Tuesday of each month, 8:00 p.m., at the Peckway Skeet Club. Robert P. Knowles, 2936 N.W. 17th Ave., Miami, Fla., secretary.

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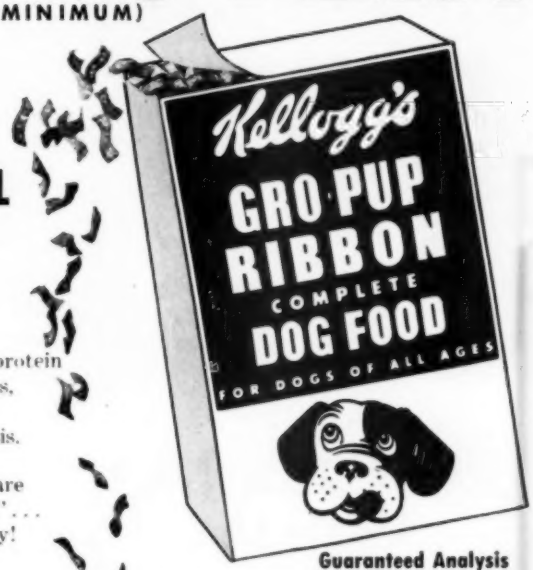

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Vitamin A	3500 I. U.
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Riboflavin	2.5 mgs.
Niacinamide	27.5 mgs.

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Names of classified advertisers using key letters cannot be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 So. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Positions

Experienced graduate veterinarian desires assistantship in mixed or small animal practice. Single, 28 years old, ambitious, capable, and hard working. Address "Box P 9," c/o Journal of the AVMA.

Graduate veterinarian, three years' experience, desires position in state of Virginia with elderly practitioner wishing to retire in near future. Licensed, Christian. Address "Box P 10," c/o Journal of the AVMA.

Veterinarian, single, 33 years of age, Christian, wants position. Eligible for state boards. Will go anywhere. Address "Box P 11," c/o Journal of the AVMA.

Junior veterinary student, age 30, with experience in small animal hospital, farm background, congenial, hard worker, desires summer work with veterinarian who is interested in eventual sale, lease, or partnership. Address "Box P 12," c/o Journal of the AVMA.

WANTED — Position with small animal practitioner in New Jersey leading to partnership or purchase if mutually satisfactory. 1941 graduate of accredited school, married, veteran, experienced. Address "Box P 14," c/o Journal of the AVMA.

POSITION DESIRED — Accredited graduate with four years' experience: two years' mixed practice; two years' commercial work in advisory capacity, also animal nutrition and research. Married, Protestant, car. Prefer West or Southwest. Address "Box P 15," c/o Journal of the AVMA.

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WANTED — Ambitious young veterinarian to work in mixed practice in central California, good facilities and working conditions. Permanent. Salary

(Continued on page 32)

Effective treatment of tapeworm infestation

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(*Continued from page 30*)

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Good future in biological production and research with a leading ethical veterinary supply company. Young graduate veterinarian with potential executive ability who is sincerely interested in contributing to the advancement of veterinary science. Write, giving age, qualifications, and salary expected. Enclose photograph. Address "Box P 13," c/o Journal of the AVMA.

WANTED — Capable veterinarian of accredited school to assist in small animal hospital. State age and qualifications. Desirable living quarters for either married or single man. Address "Box P 4," c/o Journal of the AVMA.

VETERINARIAN WANTED — for field and office work under state veterinarian in western state. Experience not essential, but applicant should be capable and dependable. Address "Box P 2," c/o Journal of the AVMA.

WANTED — Graduate veterinarian of accredited college to assist in mixed animal practice. Located in northern Illinois. State full particulars, salary expected, in first letter. Must have car. Address "Box P 22," c/o Journal of the AVMA.

Well-experienced small animal veterinarian, New York license. Must possess personality, honesty, and initiative. Car necessary. Agreeable salary with immediate part interest available in exclusive, well-established business. A good opportunity for a good man who can manage this business now or by January 1. State full personal particulars and include references and phone number. Strictly confidential. Address "Box P 20," c/o Journal of the AVMA.

WANTED — Veterinarian to assume full responsibility in mixed Illinois practice by February on percentage basis. Possibility of buying or partnership. State full particulars first letter. Address "Box P 21," c/o Journal of the AVMA.

Veterinarian assistant wanted for modern small animal hospital; good experience. Must have New York license. Address Dr. Sol Shapera, 649 W. Boston Post Rd., Mamaroneck, N. Y.

WANTED — Licensed assistant for modern small animal hospital in Connecticut. Attractive 3-room furnished apartment available. Write qualifications and salary expected in first letter. Address "Box P 17," c/o Journal of the AVMA.

Wonderful opportunity for capable veterinarian, perfect climate, long-established practice, mostly small animal. New Mexico license necessary. State qualifications. Guaranteed salary with possible percentage. Address "Box P 16," c/o Journal of the AVMA.

For Sale or Lease—Practices

FOR SALE — Active mixed practice in excellent Illinois location. Town of 10,000 near large metropolis. No real estate involved. Reasonable; terms. Full particulars on request. Address "Box P 3," c/o Journal of the AVMA.

FOR SALE — Mixed practice in rich dairy section of New Jersey. Waiting room and office, fully equipped, instruments and drugs. Large home with

(*Continued on page 34*)

(*Continued from page 32*)

business possibilities. Address "Box P 7," c/o Journal of the AVMA.

FOR SALE — Lease and practice of growing dog and cat clinic in 3-room street apartment, with or without equipment and furniture. Address Aachen Veterinary Clinic, 566 Eagle Ave., Bronx 55, N. Y.

FOR SALE — Best buy in California. Forced to sell at less than original investment. No real estate; excellent long-term lease. Priced at half one year's gross. Modern, completely equipped small animal hospital near Los Angeles, with 36 kennels, 8 ft. brick wall enclosing concrete yard with 12 ample runs and drainage, drugs, x-ray, furnished bachelor quarters. Separated contagious ward, neon signs, clipping room, etc. Address "Box F 6," c/o Journal of the AVMA.

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FOR SALE — Near San Francisco, Calif.; new small animal hospital, fully equipped. Outstanding location in rapidly expanding section. Building planned for future expansion; large lot; apartment could be added. Have good reason for selling. Full details upon request. Address "Box P 8," c/o Journal of the AVMA

FOR SALE — Growing small animal hospital in central New York, with excellent opportunity for large animal practice. Newly modern, well equipped, drugs, x-ray, and neon sign included. Address "Box P 18," c/o Journal of the AVMA.

FOR SALE OR LEASE — Modern small animal hospital, best location in Los Angeles, Calif. Fully equipped, desirable living quarters, 140 kennels. Wish to retire. Address "Box P 19," c/o Journal of the AVMA.

(*Continued on page 36*)

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It Says So On The Label

INGREDIENTS: Water, HORSE MEAT, Ground Horse Bone, Soya Grits, Oatmeal, Wheat Products (Cracked Wheat, Wheat Gray Shorts, Wheat Bran), Cracked Barley, Horse Meat By-Products 3.2%, Salt 0.5%, Primary Dried Yeast 0.18%, Irradiated 7-Dehydrocholesterol 0.03%, Onion and Garlic Powder for flavoring, Sodium Nitrite 0.0045%, Carotene 0.003%.

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(*Continued from page 34*)

For Sale—Miscellaneous

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(*Continued on page 38*)

Home-raising of hamsters for sale as experimental animals is discouraged by the USDA on grounds that large commercial producers are supplying all that the research laboratories need. Amateur producers who fail to find buyers are cautioned not to turn the animals loose, as they multiply rapidly and could become serious pests.

New Staff Member at Fort Dodge

Dr. Allan Q. Britton

Dr. Allan Q. Britton (OSU '42), formerly in general practice in Kenton, Ohio, has joined the professional staff of Fort Dodge Laboratories, Inc., Fort Dodge, Iowa.

(Continued from page 36)

The Remount Service.—Little known and less talked of is the Agricultural Remount Service, so named for the Army Remount Service which the USDA took over when the cavalry arm was abolished in the Regular Army. It may be short-lived since it is headed for liquidation by Act before Congress. Horsemen, pointing to the great service the government stallions continue to render, have asked that the service be continued.

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PROMPT CONTROL OF { **PNEUMONIA** / **HEMORRHAGIC SEPTICEMIA** / **FOOT ROT**

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Notice to Contributors

Journal of the AVMA

and the

American Journal of Veterinary Research

Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals.

Manuscripts.—Manuscripts must be typewritten, double-spaced, and the original, not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones. Footnotes and bibliographies **also** should be typed **double space** and should be prepared in the following style: name of author, title of article, name of periodical with volume, month (day of month, if weekly), and year.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple. Complex tables are not conductive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

Anonymous Letters.—Anonymous communications, of whatever nature or purpose, to the JOURNAL or to the Association will not be published or referred for consideration to any Association official or committee.

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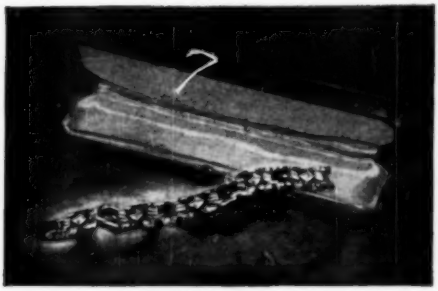

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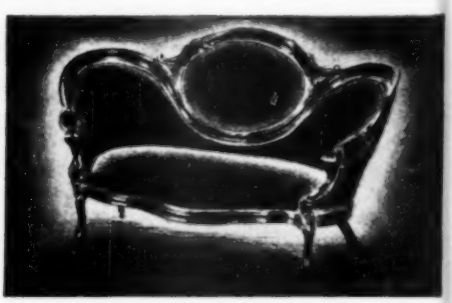

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Kansas City, Mo.

HEMORRHAGIC SEPTICEMIA

ANTI-SERUM

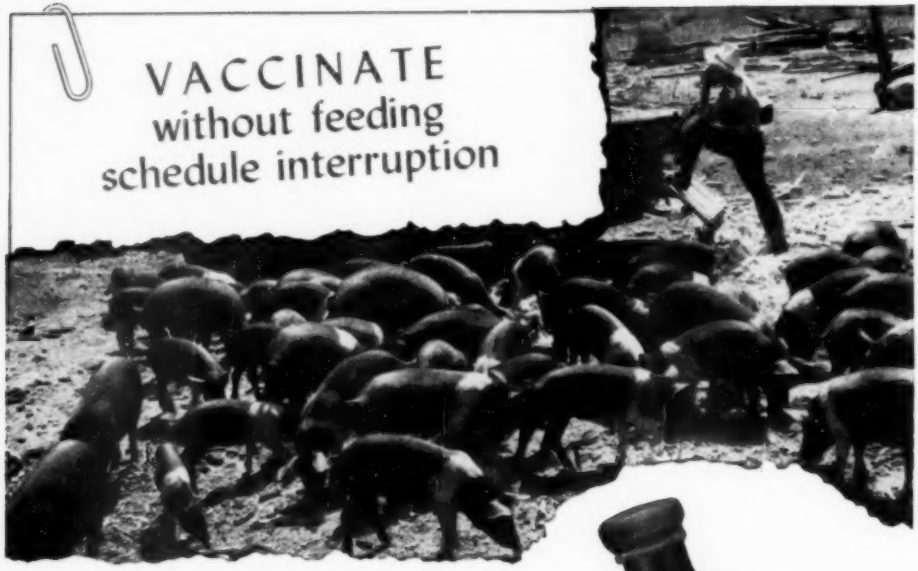
It is generally recognized that the hemorrhagic septicemia organism plays an important part in the losses incident to shipment of cattle, but many veterinary pathologists believe that filterable virus is often the primary inciting cause of so-called "shipping fever." Because of this possibility, Lockhart Anti-Hemorrhagic Septicemia Serum and Anti-Corynebacterium Pasteurella Serum are produced from mature bovines known to be immune to the various "shipping fevers." In our opinion, this "Plus Value" accounts for the superiority of the results obtained from their use.

In those areas where infection by corynebacteria is an important complication, ANTI-CORYNEBACTERIUM PASTEURELLA SERUM (Lockhart) should be used.

ASHE LOCKHART, INC.

800 Woodswether Road Kansas City 6, Missouri

VACCINATE
without feeding schedule interruption

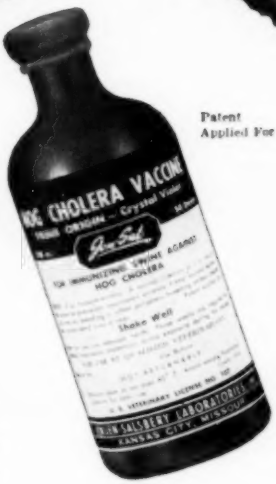


Jen-Sal

HOG CHOLERA VACCINE

TISSUE ORIGIN

more than fills the order!



Patent Applied For

Hogs vaccinated with Jen-Sal Hog Cholera Vaccine do not suffer over-reaction setbacks that disrupt feeding schedules. They continue making daily gains and are ready for market sooner. This is a real money-in-pocket advantage that your clients will recognize and ask for year after year. Moreover, there is no risk of premises contamination with virulent virus when using Jen-Sal Hog Cholera Vaccine. It's the safe, profitable way to immunize swine against cholera.

SOLD TO VETERINARIANS ONLY

There are no substitutes. Jen-Sal alone supplies Hog Cholera Vaccine of tissue origin inactivated with methylrosaniline chloride—an exclusive process that assures retention of maximum antigenicity. All serial lots are proved sterile by bacteriological test to insure uniform and enduring potency.

CV4

JENSEN-SALSBERY

KANSAS CITY, MISSOURI *Laboratories, Inc.*